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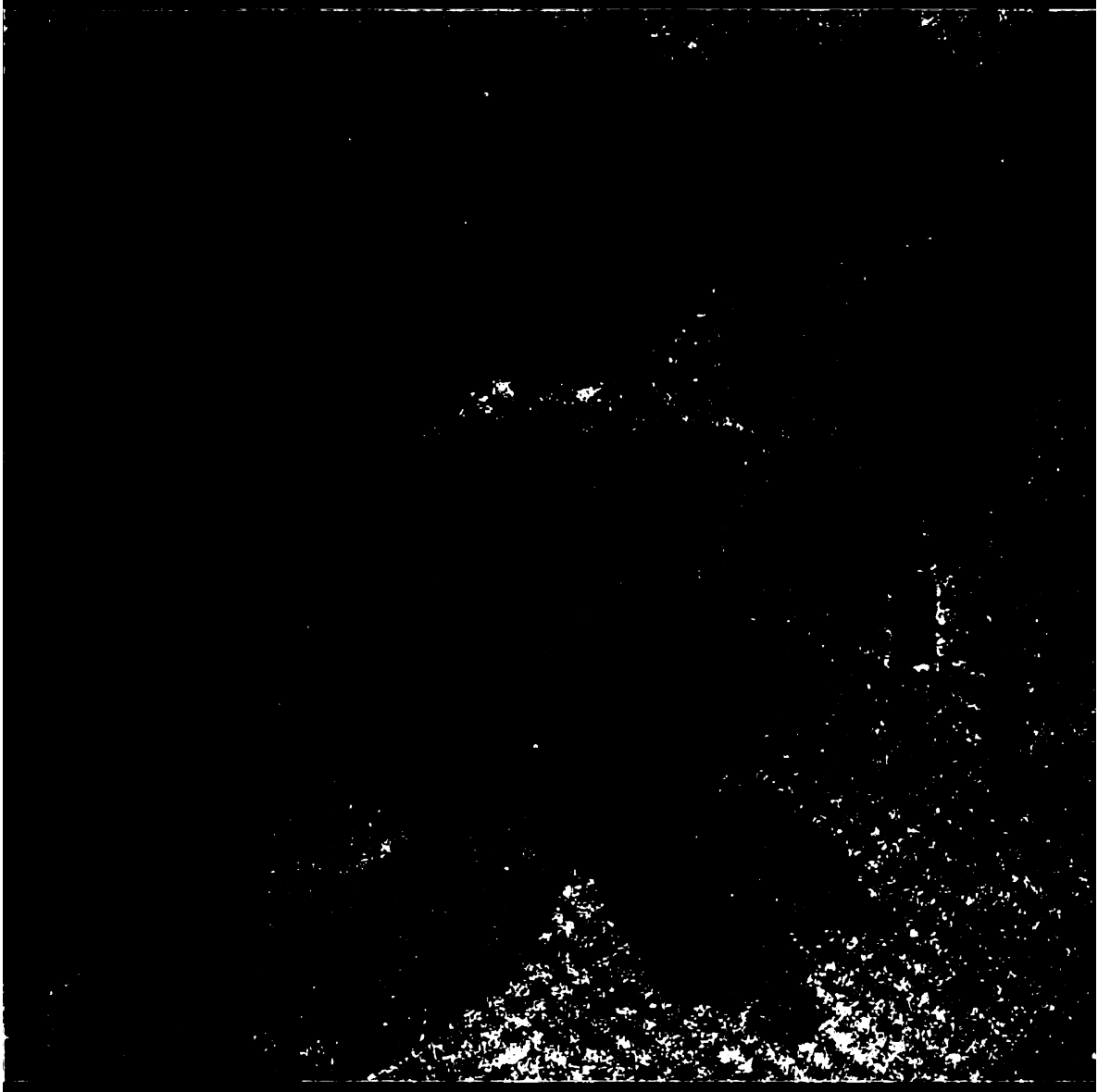
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Annals of Ophthalmology and Otology

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ANNALS

—OF—

OPHTHALMOLOGY

—AND—

OTOLOGY.

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MIXED FORMS OF TRACHOMA AND SPRING CATARRH.

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OUR knowledge of the disease of the eye known as "spring catarrh," ("vernal catarrh," "circum-corneal hypertrophy") is limited to symptomatology; we know little or nothing concerning etiology or effective treatment. The disease has been described as occurring in three forms: (1) The most frequent, in which both the hypertrophy at the limbus and the papillary changes (granulations) of the palpebral portion of the conjunctiva exist; (2) in which only the circum-corneal hypertrophy is present; and (3) in which the ocular conjunctiva remains normal, but the palpebral presents flat granulations.

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The disease is most frequently confounded with trachoma, especially when the diagnosis is first made in winter. The clinical history of exacerbation during the summer is always an important factor in this connection; and by many, this recurrence of the subjective symptoms with the advent of warm weather, and freedom during winter, is regarded as pathognomonic.

It should be remembered, however, that even though the subjective symptoms disappear with cool or cold weather, the objective signs persist to a greater or lesser degree in almost every case. The circum-corneal hypertrophy becomes smaller, the ocular conjunctiva loses its injection and the granulations of the palpebral conjunctiva become less prominent; but close observation will show that none of these objective signs disappears completely in winter; at no time does either the surface of the eyeball or the inner aspect of the lids present a perfectly normal appearance. In some cases there is sufficient change in the palpebral conjunctiva persisting during the winter to warrant the suspicion of trachoma, and in the absence of the clinical history, and when the hypertrophied nodules at the limbus shrink to insignificant dimensions, such a diagnosis would probably be made.

The writer's experience has led him to believe that trachoma and spring catarrh may be present at the same time. He has collected a number of cases which seem to show conclusively that such mixed forms do exist. The following six cases illustrate this most characteristically:

Case I. C. W., female, 14 years of age. December, 1887. Has had itching, smarting and watering for past two years; this becomes pronounced in warm weather and disappears almost completely in winter. At present does not complain of symptoms referable to the lids, but seeks relief from asthenopia. Examination showed hyperopia 1.00 D., and these glasses were prescribed. At this time the lids presented the ordinary appearance of trachoma, and, although there were traces of circum-corneal hyperthrophy, these were insignificant. The case was entered in the writer's record-book as one of trachoma. The lids

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were treated with blue-stone applied three times a week, and this was continued until the middle of March, 1888, then treatment was discontinued, no granulations existing, and the ointment of the yellow oxid of mercury was prescribed.

The patient was seen again in June, 1888, and presented a perfect picture of spring catarrh, but although the symptoms seemed quite aggravated the patient stated that they were much less marked than they had been during the two preceding summers. No local treatment was ordered except solution of boric acid.

December, 1888. She called to have her glasses changed. Ordered + 1.75 D. Sph. Examination showed the bulbar conjunctiva to be practically normal; the lids, however, presented a similar condition to that existing the previous winter. The mother had been so much impressed with the improvement during the past summer which she attributed to the copper treatment that, at her request, the writer continued these applications for three months.

The case was seen from time to time during the summer of 1889; the circum-corneal hypertrophy was marked but there was much less injection than during the previous summer, and the granulations were very much smaller; her symptoms were not pronounced.

During the winter of 1890 everything had disappeared except a few small granulations; blue-stone was applied for a month. The case was not seen during the summer of 1891, but in the fall the mother reported that the girl had practically been free from any symptoms whatever. Close questioning, however, brought out that there had been some slight annoyance during not more than half a dozen very oppressive days.

January, 1892. Beyond a slight conjunctivitis, the eyes presented nothing abnormal. All trace of the case was lost after this date.

Case II. I. S., male, 19 years of age. March, 1889. History of itching, smarting, photophobia and lachrymation off and on for the past two years. These are worse in summer and less marked, but do not disappear in winter. The immediate cause of the patient's visit was a foreign body upon the cornea. Examination showed chronic trachoma of both eyes with a commencing pannus of the right cornea. The patient was treated

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with blue-stone for two months; then finding that he was unable to call regularly, he was given a gr. ss. to one ounce solution of silver which he was to apply three times a week. He was not seen again until July 8th, when he presented every symptom of spring catarrh, including well-marked circum-corneal hypertrophy; his lids were about in the same condition as when he had discontinued the copper treatment; there was only a trace of pannus.

When next examined, August, 1890, he had the symptoms of spring catarrh, but in a less marked form as compared to the previous summer, and his objective signs were decidedly less pronounced. He had been treated at one of the eye dispensaries for trachoma during the previous winter, and blue-stone had been applied every other day. He had no pannus.

The patient changed his residence after this and was not seen until February, 1895. There were no evidences of spring catarrh, but merely a picture of chronic trachoma, the conjunctiva of the lids being velvety with slight cicatricial changes here and there; he had very little inconvenience from the condition of the lids and reported that during the previous two summers there had been no exacerbations in symptoms, and that as far as he could see, his eyeballs presented the same appearance as in winter.

Case III. M. G., male, 19 years of age. May, 1891. Has had granulations since childhood; and been treated off and on with blue-stone by two different specialists. His lids presented the ordinary appearances of chronic trachoma with slight cicatricial changes; the upper portion of each cornea showed a crescentic area of pannus; at the limbus at each side of the cornea there was a well-marked hypertrophied area; there was a great deal of congestion of the ocular conjunctiva. Upon questioning, he said that his symptoms were always worse during summer, but this he attributed to the fact that he spent his summers at the seashore and ascribed the exacerbation to the "glare from the sun and the salt in the air." The picture was an unmistakable one of a combination of trachoma and spring catarrh. The blue-stone treatment was employed during the entire summer and the following winter with constant improvement; as soon as the cold weather set in the injection of the ocular conjunctiva and the circum-corneal hypertrophy disappeared, but the condition of the lids changed very slowly.

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The writer has seen this case several times a year ever since. He has all the signs of chronic trachoma during the winter, and in summer those of spring catarrh are added; both objective and subjective symptoms have become less marked with each successive summer. During the past summer he complained very little.

Case IV. W. M., male, 7 years of age. April, 1892. Complained of congestion of eyeballs, of watering, of smarting and itching sensations of lids during the previous summer; these symptoms disappeared during the winter; now they are beginning to be felt again. Has been treated for trachoma with blue-stone during the past winter by another oculist. His symptoms are now less severe than they were during the same period of the previous year. Examination showed a trachoma-like condition of the lids; no pannus; considerable ocular congestion and moderate circum-corneal hypertrophy. The case was regarded as a mixed one of trachoma and spring catarrh, and treated with blue-stone until he left for the country in June. In the fall he reported that, though his subjective symptoms had been annoying, they had been much less marked than the previous summer. In the winter the eyeballs had an almost normal appearance, but the granulations remained of the same size; he complained some of a feeling of sand beneath the lids, and the latter were treated with copper for six weeks.

He has had no treatment since then (February, 1893,) and each summer his symptoms have been decidedly less marked than the summer before. Examination of his lids in March, 1895, showed nothing beyond slight evidences of trachoma here and there. During the past summer he gave no evidences of spring catarrh, and he did not complain of any symptoms referable to the eye.

Case V. H. W., male, 10 years of age. June, 1893. For the past three years complains of watering, heavy feeling, burning and itching; all these symptoms are worse during warm weather, and subside almost completely during winter. During the present summer (1893) his symptoms have been worse than ever. There is a great deal of congestion of the conjunctiva of the globe and considerable hypertrophy at the limbus. Granulations of the palpebral conjunctiva of both eyes are of very large size.

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The granulations were expressed with Knapp's roller forceps (under ether), and during the balance of the summer the symptoms were very much less marked, the lids remaining free from granulations, but the congestion of the ocular conjunctiva and the circum-corneal hypertrophy remaining about the same.

The following summer (1894) the symptoms returned, but both objective and subjective manifestations were much less pronounced. The granulations had reappeared and the roller forceps was employed a second time. The balance of the summer was spent in comparative comfort.

July, 1895. The boy reported that he suffered no annoyance whatever; there were no granulations, but there was a little circum-corneal hypertrophy and some congestion of the ocular conjunctiva.

Case VI. E. C., female, 8 years of age. July, 1895. During the past three years patient has complained of itching, burning sensation and watering, and eyes have been "blood-shot." These symptoms occur only during the summer, and disappear with cooler weather. Examination showed both upper and lower lids covered with papillary granulations; there was circum-corneal hypertrophy at the inner and outer part of the limbus of both eyes, more marked externally; the upper part of the right cornea presented a narrow crescent of pannus. The patient was treated with blue-stone three times a week for three months. At the end of this time the pannus had disappeared almost completely. During the continuance of the treatment, even during the hot weather the symptoms, both objective and subjective, showed slow but steady improvement.

These six cases have proven to the writer that there are *mixed forms of trachoma and spring catarrh*, cases which probably are originally trachoma, and suffer from the additional signs and symptoms of spring catarrh during the warm weather. This conclusion is based upon a study of the course of the cases and strengthened by the existence of pannus in some, and by the fact that marked improvement followed the use of blue-stone or the operation of expression in all. We know that in simple cases of spring catarrh such treatment has no effect upon the tedious progress of the disease and even aggravates the symptoms

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when used during the exacerbation. Such cases are not amenable to any form of treatment known to us, and persist for many years despite every means at our command.

In every one of the cases reported, on the contrary, the use of blue-stone appears to have had a very favorable effect upon the course of the disease; such a result also followed the employment of the roller forceps. Such achievements can only be attributed to the association with trachoma. In the October, 1895 number of the *Archives of Ophthalmology*, Gradle reports having used expression in two cases of the palpebral form of spring catarrh with temporarily good results.

Spring catarrh has the same relation to the eye which rose cold and hay fever have to the nose. Just as the latter affections may occur in cases in which the nasal mucous membrane is normal, and also in cases in which this membrane is pathologically changed, so the analogous ocular disease may implant itself upon a normal or a trachomatous conjunctiva.

The writer has been treating some cases of simple spring catarrh by means of the constitutional treatment recommended by Bishop in hay fever (preliminary treatment with salicylate of sodium, treatment during the attack with dilute sulphuric acid). This treatment was used in too small a number of cases, and was begun too late during the past summer to warrant any definite conclusions at the present time; but the results during this limited period were sufficiently favorable to justify further trial.

Conclusions:

1. There exists a mixed form of trachoma and spring catarrh in which the symptoms of the latter are added during the prevalence of warm weather.

2. The existence of the slightest evidence of pannus or of cicatricial changes in the lids strengthens this diagnosis.

3. The use of the treatment for trachoma (blue-stone or expression) exerts not only a good effect upon the trachoma, but also modifies the course of the spring catarrh in a decidedly favorable manner.

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4. When such an association of these two diseases is suspected, the treatment of trachoma should be instituted since we are not at the present time aware of any method which will shorten the lengthy duration of spring catarrh.

5. It seems probable that constitutional treatment on the lines now adopted in hay fever will be productive of more success than we have hitherto had with the local treatment of ordinary cases of spring catarrh.

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ON THE PREPARATION OF MACROSCOPICAL EYE SPECIMENS.[1]

By William Campbell Posey, M. D.,
of Philadelphia.

Assistant Surgeon Wills Eye Hospital; Ophthalmologist to the Howard Hospital and to the State Hospital for the Insane at Norristown, Pa., etc.

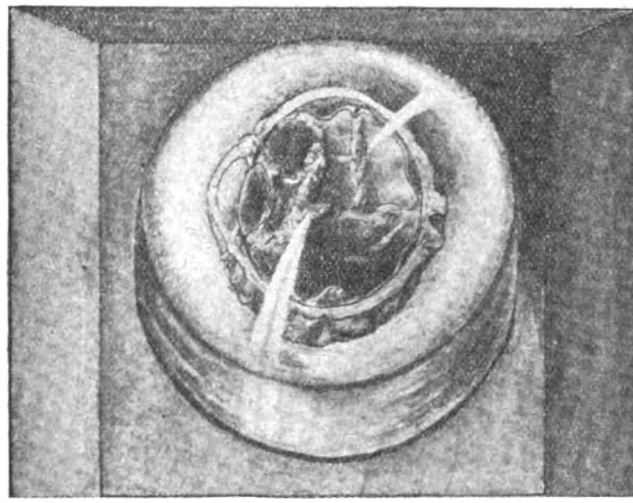
IT is my wish to exhibit to you this evening a series of macroscopical specimens of eyes which I have prepared during the past winter in the laboratory of the State Hospital for the Insane at Norristown. I do this with a certain reluctance as I fear that most of you will find but little pleasure in listening to a description of a group of diseases which are perhaps unknown to you as general pathologists, but I trust that the beauty of the specimens may repay you for viewing them. The method of preparing them was taught me by Mr. Treacher Collins, of London, curator of the museum in the Moorfields Eye Hospital, and is practically the same as that which was introduced by Mr. Priestley Smith some years ago.

The glass jars which I employ have been made for me by the Fox Optical Co., and may be obtained at a reasonable rate. They consist, as you see, of a simple glass jar which is capped with a plano-convex lens. This small disc of opaque glass is used to seal the jar, and forms an excellent background for the specimen. A convenient receptacle for the lens is offered by this block of wood.

[1] Read before the Philadelphia Pathological Society.

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The preparation of the eye for mounting is briefly as follows: The entire globe is hardened in Muller's fluid for at least three weeks. It is then placed in a freezing mixture of salt and ice, care being taken to envelop the eye in oiled silk to prevent any of the fluid from the freezing mixture coming in contact with it. After the globe is thoroughly hardened, it is divided by a bold stroke of a knife, that form of knife used in sectioning the brain being the best adapted for this purpose. One-half of the eye is reserved for microscopic examination, whilst that which is to be mounted macroscopically is placed in water to thaw



Sketch of finished macroscopic specimen, mounted in gelatine, with jar capped with a plano-convex lens, and fitted into a wood block.

out and to rid it of the excess of Muller's fluid. To remove the stain caused by the fluid more effectually, the section of eye is then placed in a 5% solution of chloral hydrate, care being taken to change the solution daily until the section is no longer discolored. As the globe would shrink were it placed in the mounting fluid at this stage, it is first subjected to solutions of glycerin and water of different strengths. The eye is then ready for mounting.

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The preparation of the medium used for this purpose is the only difficult stage in the entire process. It is quite a painstaking task to obtain a clear solution, and one frequently consumes three or four hours in the process to be rewarded by a product which is too cloudy for use. The solution is best prepared as follows: One ounce (about twelve to fourteen strips) of the best French gelatin (Coignet & Co., Paris,) is cut into small bits by a pair of scissors, eight ounces of water is then added to the gelatin, and the mass set aside in a beaker to swell. The whites of two eggs are then taken, and to better clear the mixture later on, the shells of the eggs are cut into fine pieces and thoroughly mixed with the albumen. The gelatin is now melted with a gentle heat, a few drops of carbolic acid being added as an antiseptic. As soon as it begins to boil the albumen is added, and the whole mass stirred with a glass rod. As the mixture is very readily scorched, constant attention must be given it until the fluid is quite clear below and a thick scum has gathered upon the top. The mixture is now filtered through flannel, or preferably through a steam filter, and the product which should be quite clear is collected in a jar which has been made perfectly clean. Eight ounces of glycerin is then added. After the glycerin and jelly have been thoroughly mixed, one of the glass cells is two-thirds filled with the solution, and the section of eye floated upon it. The globe is then seized at the equator with a pair of forceps and gently rolled over in such a way that no air bubbles are permitted to get into its concavity. Should any bubbles, however, get in, they can be readily removed by sucking them out through a glass tube. A hand-mirror is now placed under the specimen and a good view is obtained of the position of the eye, and of any air bubbles which may have escaped detection from above. The globe is then kept from rising in the fluid by placing over it a bit of card-board, perforated by a pin.

The jar should never be entirely filled with the solution, for it is always better to leave an air space between it and the opaque disc which is cemented on after the jelly has thoroughly set.

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I will hand around these specimens that you may the more readily study them. You will see the globe somewhat magnified, the effect of the plano-convex lens.

Specimen 1. Normal eye. This eye was removed from an inmate of the Norristown hospital shortly after death, and shows very beautifully the structure of the normal eye. The relative thickness of the sclerotic and cornea, and the typographical relation of the anterior and posterior chambers of the eye can be readily studied. The optic nerve has been cut directly in half so that the physiological excavation in its head is plainly visible. The retinal vessels are also seen coursing over that delicate sheet and its pigment layer can be well seen as it continues forward to form the posterior layer of the iris.

Specimen 2. Hemorrhage into the ciliary body. This eye was presented to me by Mr. Collins. It was enucleated in the Moorfields clinic on account of pain. It shows very beautifully a hemorrhage that has been localized in the ciliary body. The angles of the anterior chamber are patulous, and the optic nerve-head is not excavated, showing that if a glaucomatous state had necessitated the removal of the eye, the increase in intra-ocular tension could not have been of long standing. The vitreous appears shrunken and has contracted into a flocculent mass directly posterior to the lens. The numerous rucks in the retina are of post-mortem origin. This specimen has been in my possession four years and exemplifies very well the durability of this method of mounting, for the jelly is just as clear and as firm as the day upon which it was poured into the cell.

Specimen 3. Chronic glaucoma. This eye was given me for mounting by Dr. Risley, and exhibits in a very striking manner the essential pathological features of that disease. In the first place, the globe is seen to be rather short, and was probably a hypermetropic eye. Again the lens seems to be relatively large, and the space between the

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margin of the lens and ciliary body appears to the naked eye to be very much compromised. The angles of the anterior chamber are completely blocked, the pupil is widely dilated. The optic nerve-head is cupped and in quite a different manner from that in the normal eye, for if you will look closely you will see that the excavation comprises the entire head of the nerve, whereas, in the normal eye the cup was confined to its central portion, about the entrance of the retinal vessels.

Specimen 4. Myopia and anterior polar cataract. This eye was enucleated by Dr. Zimmerman. I show you this specimen next that you may contrast it with the preceding, for one is at once struck with the difference in length of the two eyes. I should think from the length of this globe that there must have been a myopia of over 20 D. You will also observe that the eye gives the impression of over-stretching. Its walls are much thinned, the sclerotic being very thin in places, and in the posterior pole of the eye there are large whitish looking areas which indicate patches of choroidal absorption, the sclerotic being visible in the bottom of the area. As often happens in these cases, the vitreous is much shrunken and the retina is seen to be detached below. If you will look at the cornea you will find it to be opaque in its central portion. This opacity is directly continuous with a whitish mass which is in intimate association with the anterior capsule of the lens. There has been a primary ulcer of the cornea in this eye which has so thinned that membrane that it has given way to the intra-ocular tension and has perforated. The lens has been pushed forward at the time of the escape of the aqueous humor and as a consequence of the impaired nutrition to which the cells lining the anterior capsule were subjected, this prominence, or what is known as anterior polar cataract, has formed.

The three other eyes which I will now exhibit, were enucleated in our clinic at Wills Eye Hospital by my chief, Dr. Oliver.

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Specimen 5. Intra-ocular growth. This is a most unusual specimen, representing very beautifully a neoplasm of the anterior segment of the eye. The case is now being carefully studied, and will be reported in full elsewhere. I may state however that the patient was referred from the country for enucleation with a diagnosis of irido-cyclitis, although there had been some evidence of intra-ocular growth. Upon viewing this specimen one is instantly struck by the contrast in color which is presented by the different parts of the eye. This brownish-red mass, I take to be the neoplasm, whilst the yellowish mass which appears to fill in the interstices is probably purulent. A similar case was reported in Graefe's *Archives for Ophthalmology* last year, and throws considerable light upon the one under discussion. I am inclined myself from the microscopical examination to consider the growth to be gliomatous in nature, as it consists of cells which are distinctly neuroglear in type.

Specimen 6. Irido-cyclitis. This eye was enucleated on account of pain. This symptom was occasioned by the development of secondary glaucoma as a consequence of a stasis in the intra-ocular circulation caused by a blocking up of the anterior chamber. The fluid in the posterior chamber had driven the iris forward to such an extent that the membrane was in contact with the cornea. The iris being bound down to the lens at its pupillary edge by firm adhesions, and being attached to the ciliary body peripherally, has an arched appearance, and deserves the appellation of *iris bombe.* The vitreous humor has shrunken, and in its place broad bands of connective tissue are seen which traverse that humor. The lens is encapsulated in a mass of newly-formed inflammatory material. By throwing the light into the deeper portion of the specimen by means of this strong convex lens which I hold in my hand, one is able to see very beautifully a number of fine filamentous processes which are given off from the large masses of connective tissue. The retina is completely detached upon

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one side, probably as a result of the contraction of these bands. A large hemorrhage is seen to the nasal side of the eye occupying the internal retinal layers.

Specimen 7. Perforating wound of eye. This last specimen shows very well a frequent result of this class of injuries. A bit of steel had perforated the cornea and the lens of this eye, and had been successfully removed; notwithstanding this, however, symptoms of sympathetic inflammation supervened in the other eye, and the offending and exciting eye was removed. The configuration of the eye appears perfect. There is a broad band of newly-formed tissue which stretches across between the two chambers of the eye. This is composed of lenticular debris, newly-formed capsular and connective tissue, and the iris which is glued into the mass. I have examined the optic nerve of this eye microscopically, but find no evidence of inflammatory change in it which is additional evidence that the disease does not always affect the sympathizing eye by an inflammation which is propagated along that nerve.

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THE REMOVAL OF FOREIGN BODIES OF IRON OR STEEL FROM THE INTERIOR OF THE EYE-BALL WITH THE GALVANO-MAGNET.

By Harry Friedenwald, A. B., M. D.,
of Baltimore, Md.

Associate Professor of Ophthalmology and Otology, College of Physicians and Surgeons, Baltimore.

THE danger of the presence of foreign bodies in the interior of the eyeball is very great. Cases in which the body becomes encapsulated and innocuous are rare; in the great majority a destructive inflammation follows, which often results in loss of vision of even the uninjured eye by sympathetic ophthalmia.

The inflammation of the eyeball into which the foreign body has entered may be due to pathogenic organisms which were carried in with it or by its own chemical properties.

In the latter case, the extraction of the foreign body will alleviate all danger,[1] but even in the former it is probable that the early removal will often have a similar happy result.

In a large number of cases the foreign body is iron or steel. This may be removed with the magnet. The simple magnet is rarely of sufficient power to be of service; the galvano-magnets that have been used are essentially of two kinds; first, a small instrument invented by Hirschberg, the tip of which is inserted into the eyeball through an incision; second, large galvano-magnets, such as may

[1] See Leber, *Entstehung der Entzuendung*, Leipzig, 1891, p. 272.

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be found in physical laboratories. The former are comparatively strong, and have the great advantage of being light and easily handled, the latter are of intense power, but owing to their great size and weight are fixed. These have only recently been used in a few of the largest clinics of Europe;[2] when placed in proximity to the eye, but not introduced within it, they may draw a hidden chip out of the eyeball or into such a position that the smaller magnet can reach it.

A controversy[3] has recently been waging as to the relative value of these instruments; the smaller instrument, which every oculist can possess and can easily use, alone concerns us. It was Hirschberg's galvano-magnet that was used in the cases described below.

The operations, which will be very briefly described, are not unique, still it is hoped that they are sufficiently interesting to merit a report.

CASE I. *Removal of a chip of steel imbedded in the iris and capsule of the lens.*

Mr. C., 25 years of age, was injured while working on a piece of steel; a chip struck the eye, and he came to have it removed, thinking it lay upon the cornea. I saw the patient at 10 p. m., August 6, 1893, the day of the injury, and found that a small foreign body, evidently a chip of steel, had penetrated the anterior chamber and was lodged in the iris of the right eye. The corneal wound was represented by a fine line. The lens already showed a peripheral opacity; cocain and atropia were instilled.

On the following morning the partial cataract was easily discernible; the iris had dilated, excepting at the point where the foreign body was lodged and where it seemed to pin the iris to the lens.

Operation August 7, under chloroform. An incision was made at the inner margin of the cornea with a keratome, and the point of the magnet was introduced through it. It did not dislodge the chip immediately, but in a few moments it drew it out, together with a little iris in which it was imbedded and hidden. The por-

[2] Haab, Schloesser, Deutschmann.

[3] *Deutsche Med. Wochenschrift*, 1894, pp. 393, 494, 530, 592.

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tion of the iris containing the chip was therefore excised, the rest replaced; a small secondary pupil is the result. The chip measured 1 *mm.* × 2 *mm.* and was very thin. Its weight was $^1/_{25}$ gr.

Atropia was instilled for some time and vision improved, being $^8/_{18}$ for about one month. For a long time the cataract made no progress. In May, 1894, the patient suffered with typhoid fever, and since his convalescence the cataract made rapid strides; when examined in June, 1895, it was almost complete. This observation is interesting in view of the fact that several cases have been published in which cataract has developed in youthful individuals after an attack of typhoid.

In this case there is at present little vision, the removal of the cataract, it is hoped, will restore useful vision.

CASE II. *Removal of a small chip of steel from the macular region with the magnet; loss of central vision and detachment of the retina; preservation of the eyeball, and eccentric vision.*

W. S., 26 years of age, was injured April 24, 1895, while striking a steel chisel with a hammer. He felt that something had struck his eye and in a few minutes he noticed the appearance of a floating object before him. He immediately applied for treatment at the City Hospital, and when seen about two hours after the injury the following observations were made: In the upper inner margin of the cornea there was a minute linear wound. The pupil was round. In the upper inner portion of the iris very near the periphery there was a small black spot, an opening in the iris tissue. After dilating the pupil with atropia an opacity was seen in the upper portion of the lens. With the ophthalmoscope a small black point surrounded partly with white border and partly with blood was seen lying midway between the fovea and the papilla, on a line just above the upper level of the papilla. The spot itself was one-quarter P. D. by one-half P. D. in size. A number of streaks of blood could be followed, running downward and slightly outward and forward into the vitreous. One large hemorrhagic effusion was seen lower down in the vitreous, forming a perfect arc.

Central vision was $^6/_{60}$, but there was a distinct scotoma about 10° in each diameter, situated to the temporal side and below the point of fixation, but reaching to within 4° or 5° of this point.

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Taking into consideration the fair central vision, and the hopeessness of retaining this after any operative measure, no effort was made at the time to remove this foreign body. He was kept at rest and watched for several days; but the irritation of the eyeball became greater day by day and his vision lessened.

On April 30, therefore, when all hope that the chip could be left in the eyeball without danger had been given up, we proceeded to extract the same by means of the magnet. The patient was put under chloroform; a conjunctival flap was laid back over the region of the external rectus muscle, and an incision was then made just above the external rectus muscle, back of the equator of the eyeball.

The incision was about 3 *mm.* in length, and was made as far back in the eyeball as was convenient after the eyeball had been rotated inwards as far as possible. The direction of the incision was from before backwards. An incision was likewise made into the vitreous with a Graefe knife, according to the method of Hirschberg.

The curved magnet point was then inserted, and after having been turned slightly in several directions it brought out a minute flat scale of steel, 1 *mm.* $\times$ 1.5 *mm.*

Very little vitreous was lost during the operation. The immediate effect of the operation was to increase the congestion, but after a few days this subsided, and in about ten days the eye was almost white. At this time large vitreous opacities were to be seen with the ophthalmoscope. There was little pain after the operation and this subsided almost immediately.

The vitreous gradually became clearer and the nasal half of the retina soon assumed its normal appearance; after some time the blood was entirely absorbed and a white linear scar could be seen in the outer portion of the retina, near the periphery. Central vision has never returned. He was examined November 26, 1895, the eyeball presented no external appearance of disease, excepting a slight degree of divergent strabismus.

He can count fingers at a few feet, slightly eccentrically. The field of vision is restricted, excepting in the temporal portion, where there is no loss. The binocular field of vision is, therefore, complete.

There is an irregular and extensive, though slight, detachment of the retina, especially below and toward the outer side, in the temporal portion involving the macula and reaching the

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papilla below. In the outer portion of the retina, near the equator, the white linear scar is distinctly visible, and attached to it a large, white connective tissue mass can be seen. The traumatic cataract has made no progress; is slightly smaller than at the time of the operation. It consists of a spicule in the upper inner part of the posterior capsule and a smaller opacity diametrically opposite in the lower portion. The eye has been completely free from any irritation for months.

Though central vision was not preserved in this case, and while detachment of the retina has occurred, it is fair to say that we have preserved the eyeball and an amount of eccentric vision which is quite useful, for without the operation there was every indication that the eyeball would soon have had to be sacrificed.

CASE III. *Removal of a chip of steel imbedded in the ciliary body and periphery of the retina; result, perfect vision.*

Mr. E., 47 years of age, while cutting off a piece of steel with a steel chisel on October 25, 1894, felt something strike his eye, causing severe pain for a few minutes. For several hours he was unable to see, but sight returned and he resumed his work. During the following days his sight was fair, though he continually saw a cloud moving before him towards his left side.

October 29. Four days after the injury, he consulted me for the first time. The eyeball was congested, the media were fairly clear and the optic disc and retina were normal; vision was about $\frac{1}{2}$.

After the pupil had been dilated by atropia, we could see in the innermost periphery of the ophthalmoscopic field, just a trifle below the horizontal meridian, a dark prominent mass, partly black, partly white and near it a small effusion of blood. The size of this object, which evidently was a chip of steel, could not be determined, for measurements in the periphery are not trustworthy. Still, as later developments showed, what was seen with the ophthalmoscope must have been but a small part of the foreign body, the greater portion of which was buried in the tissues. The field of vision showed a small defect in the outer periphery.

On carefully examining for the point of entrance of the foreign body, we found a minute scar at the inner border of the cornea, about 1 *mm.* in length. The iris showed no injury, but deep in

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the inner angle of the anterior chamber there was a dark red streak of blood. The chip had therefore passed in between the iris, the ciliary body and the sclerotica and was imbedded in the retina at the equator of the eyeball.

October 31. His condition was worse, the cornea becoming hazy, showing fine streaks and dots, the iris hyperemic; the pupil would not dilate at maximum, though atropia was instilled frequently.

There was manifestly no hope in waiting, and on the following day the operation for the removal of the foreign body with the magnet was performed.

It is essential in operations of this kind to pay strict attention to two points: first, to antisepsis, for we expose the vitreous humor, which is one of the most easily infected tissues in the human body; the second important matter is to properly locate the chip by correct measurement, for otherwise the point of the magnet may be at too great a distance and the operation thus prove a failure.

From the field of vision we learned that the defect at most reached to 66°, or to a point corresponding with a part of the retina 12 *mm.* behind the sclero-corneal junction (according to Donders). But the retina is usually affected beyond the immediate seat of the foreign body, and its situation in this case would therefore be somewhat less than 12 *mm.* from the corneal margin.

On the other hand the body was seen to be located at the periphery of the ophthalmoscopic field. Now we know that the most peripheral part of the eyeball that can be seen with an enlarged pupil is the equator or a little beyond it.[4]

Assuming then, that it was situated just at the equator, we would look for it 8 *mm.* behind the corneal margin. The conclusion, therefore, was that we would find the chip just below the horizontal meridian at a point 8 *mm.*, or at most 12 *mm.*, behind the cornea.

Operation under chloroform. With a compass we measured off a point 8 *mm.* behind the corneal margin, and a trifle below the horizontal meridian, after the conjunctiva had been thrown back as a small flap; from this point we made an incision directly backwards, extending about 5 *mm.*, and therefore embracing the region where we had located the body. The insertion of the

[4] See Hirschberg, *Centralbl.*, 1891, p. 321.

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internal rectus was next separated so as to enable us to explore the wound more easily. The curved point of the magnet was introduced into the opening and held in different position, when the chip came out upon the tip. It measured 4 *mm.* × 2 *mm.* × $^1/_2$ *mm.* and weighed $^1/_3$ gr.

There was not the slightest prolapse of vitreous and the bleeding was very slight; the conjunctival flap was next readjusted and the patient promptly recovered. On the day following the operation there was absolutely no pain, and sight was fair. There was very little effusion of blood into the vitreous in the region of the wound and the defect of the field of vision was slightly larger than before the operation.

The vision rapidly improved, the conjunctiva lost all injection, and in a short time the eye was practically restored to its normal condition. The eye was last examined October 20, 1895. There was no evidence of the injury save the very peripheral lesions in the retina. V., L. E. with + 3.0 D. = $\frac{8}{8}$, almost perfect.

The ophthalmoscope showed a small scar at the seat of operation and the hemorrhagic effusion was completely absorbed. We may therefore truthfully say that this eye and its sight were saved by the magnet operation.

As a point of practical importance it may be mentioned that in the latter operations a small storage battery of three cells was used and that this was found highly satisfactory. The Grenet cell, which was formerly used with the magnet, is unreliable and never produces as high a power as does the three-cell storage battery.

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EPHEDRENE HYDROCHLORAT.

By George F. Suker, M. D.,
of Toledo, Ohio.

OPHTHALMOLOGISTS have long been looking for a mydriatic for diagnostic purposes which would possess the following advantages:

(*a*) Rapid in its action.

(*b*) To produce as nearly as possible a maximum dilatation of the pupil.

(*c*) To be of short duration, *i. e.*, the effects.

(*d*) Not to interfere with the act of accommodation.

(*e*) To produce no augmentation or diminution of the intra-ocular pressure.

(*f*) To be free from untoward accessory effects.

Though duboisin, atropin, homatropin, scopolamin and cocain fulfill some of the named requirements, yet no one meets them all. However, in ephedrene we possess a mydriatic which answers all of the above conditions.

Ephedrene is an alkaloid from the leaves of *ephedra vulgaris* or *ephedra distachya*, and not to be confounded with Ephedren, which latter is an amorphous compound obtained in connection with glucose during the decomposition of the glucoside present in *ephedra antisyphilitica*. This ephedrene is considered the active principle of the plant. Kindly note the difference in the spelling of the two—ephedren and ephedrene.

The alkaloid ephedrene is not amorphous, but a colorless stable crystal, melting at 410° F. (210° C.), soluble in four

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parts of water, readily so in alcohol, practically insoluble in ether. The hydrochlorid, in which form the base is chiefly used, appears in colorless needles, very readily soluble in water.

It was Mr. Kinnosuke Miura, of Tokio, who first found the aqueous solution of ephedrene. The clinical researches of Kinnosuka Miura first demonstrated the mydriatic properties of ephedrene hydrochlorat when applied externally in frogs and mammals, as well as evincing its lethal effect when a sufficient quantity was taken internally.

It causes death by the arrest of the heart's action and respiration. He reported a series of eighteen cases of the use of a 10% solution, carefully noticing its mydriatic properties. In each and every case he noticed a uniformity of action as well as a good reliability. The suspension of accommodation was not perceptible. In each case one or two drops of a 10% solution were instilled into the conjunctival sac at a few moments interval, and a complete mydriasis was obtained in ten to twenty minutes.

Of late Dr. Groenouw and Dr. Geppert have made extended clinical experiments and these confirm fully those of Miura. However, they use the ephedrene in connection with the homatropin. They say that the addition of homatropin greatly increases the intensity of the ephedrene, yet not influencing its transitory effects. The following is the formula which they employ:

Ephedrene hydrochlor.	1 0
Homatropin hydrobrom.	0.01
Aq. dist.	10.0

The homatropin may add to the efficiency of the ephedrene, still you obtain just as good results in using the latter alone. The only difference is that the mydriasis is obtained sooner when the combined solution is resorted to; and, that strong light does not have a tendency to cause as much pupillary contraction. Furthermore, the dilatation is not quite as great when ephedrene is employed in place of ephedrene and homatropin combined. It has been my

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experience that the ephedrene alone answers all requirements. It makes a very convenient mydriatic for examinations of refractive errors by skiascopy.

Both Groenouw and Geppert admit that ephedrene is an admirable mydriatic for diagnostic purposes, and the writer also holds this opinion after having employed it in a number of cases.

Still, it must be said that ephedrene can not replace homatropin or atropin for therapeutical purposes. An irritated and inflamed iris does preclude any definite or appreciable pupillary dilatation. Hence in such cases we still must employ the stronger mydriatics for diagnostic purposes.

It has also been noticed that children and aged patients are more readily influenced by ephedrene than are the robust and vigorous. No untoward results follow the long continued instillations; in cases where it is deemed advisable to maintain a moderate mydriasis for any period of time, a 1% solution is excellent—two or three drops being instilled several times daily.

In conclusion, the writer will say that ephedrene hydrochlorat, so far, is the only mydriatic which fully meets the above stated six conditions.

For a more detailed review on the subject see: *Helbing's Modern Mat. Med.; Edinburgh Med. Jour.*, Jan., 1888; *American Drugg.*, *May*, 1888, *and New York Med. Jour.* Vol. LXI, No. 23.

The "Monticello."

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A SEVERE CASE OF TOBACCO AMBLYOPIA.

By A. Proudfoot, M. D.,
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OCULIST AND AURIST TO THE WESTERN GENERAL HOSPITAL AND PROTESTANT INFANT HOME; ASSISTANT OCULIST AND AURIST TO THE MONTREAL GENERAL HOSPITAL; CONSULTING OCULIST AND AURIST TO THE MONTREAL DISPENSARY.

THE extreme rarity of the case which I am about to relate is my best excuse for taking this opportunity of putting it upon record.

December 13, 1888. I was consulted by M., a Cuban by birth, 24 years of age, a student, for failing sight. At the time of his visit he complained of everything appearing misty and indistinct, and he was only able to read No. 3 Y a line at a time with considerable difficulty. Vision for distance was $\frac{1}{50}$ in right eye and $\frac{1}{60}$ in the left eye. He had a manifest hypermetropia of 1 D. in each eye with slight convergent strabismus in the left. On examination with the ophthalmoscope the media were found to be perfectly transparent, pupils moderately contracted, the discs of both eyes were of a peculiar mottled appearance resembling a checker-board, the squares having a glistening vitreous appearance as if painted upon porcelain, and varying in color from white to slate or bluish-green. The margins of the discs were very indistinct, but the rest of the fundus was perfectly normal.

The field of vision was contracted, and central scotoma for red and green not very well marked.

I must confess that I was at first unable to make a satisfactory diagnosis as there was no history of syphilis or any other constitutional disease to account for the trouble. I, however, ascertained that the patient was in the habit of

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smoking from twenty to thirty cigarettes a day and inhaling the smoke; that he had begun to smoke and chew when only six or seven years old, and had been addicted to the excessive use of tobacco ever since; he, however, discontinued the practice of chewing as the habit of inhaling the cigarette smoke increased upon him.

With these facts in my possession, I had no difficulty in coming to the conclusion that I had a case of toxic amblyopia to deal with, especially as I remembered having seen a case of toxic amblyopia in a boy of 17, at Moorfields Hospital, in London. The boy had been employed in a tobacco factory ever since he was a little fellow, and was engaged in handling tobacco that was soaking in tubs of water, so that his arms were constantly wet above the elbow. He also chewed tobacco to excess.

The occurrence of toxic amblyopia before the age of 30 is extremely rare.

Uhthoff only found four cases in a series of 135 between 28 and 30, the greatest percentage of cases being between 40 and 50. My own experience is that all my cases have been in patients of 30 years and upwards with the exception of the one under consideration, and I have not seen another case excepting the one at Moorfields which I have mentioned. And I can only account for the early appearance of the disease from the fact that the patient had begun the use of tobacco at a very early period, and had continued its use in perhaps the most injurious way in *chewing*, and *inhaling* the *smoke* from *cigarettes*.

I put this patient upon a mixture containing $^1/_{24}$ of a grain of strychnia 3 t. d.; prohibited the use of tobacco in any form, and ordered glasses of + 1 D. to correct his M. H., and improvement was rapid.

I examined the patient just one year afterwards and found his sight quite restored.

The discs, however, had the same checker-board appearance, so I concluded that that peculiarity must have been congenital.

2 Phillips Place.

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REPORT OF A CASE OF DERMOID GROWTH ON THE SCLERO-CORNEAL JUNCTION.

By A. Edward Davis, A. M., M. D.,
OF NEW YORK.

INSTRUCTOR IN DISEASES OF THE EYE, NEW YORK POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL, ETC.

MORRIS S., a Russian Jew, 17 years of age, a tailor, was sent to my clinic at the Post-Graduate School on December 10, 1894, by Dr. A. D. Mewborn of this city.

Family history: Both father and mother are living and in good health. He has one brother older than himself who is healthy; also a younger sister who has lateral spinal curvature. He, himself, has always enjoyed good health. At birth a small whitish growth was noticed at the temporal margin of the left cornea which has grown very slowly since.

Present condition: At the temporal margin of the left cornea, encroaching about 3 *mm.* on its surface, (and an equal distance on the sclera) is a small white tumor with two dark hairs projecting from its summit. This tumor is raised about 3 *mm.* in heighth. Vision in the right eye is $\frac{20}{20}$, while in the left it is but $\frac{20}{70}$, due to an astigmatism. The ophthalmometer showed in the left eye astigmatism with the rule 4 D. axis 60° + or 150° —.

Treatment: Under cocain anesthesia the tumor was removed by means of a Beer's knife and scissors. The growth was very firm on the cornea, cutting like cartilage. After the tumor was removed the surface at site of the tumor was dried with cotton, and that portion of the cornea

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on which the tumor was situated cauterized with pure carbolic acid applied on a blunt probe. The scleral conjunctiva was closed with one suture and the eye bandaged. The patient was discharged after ten days treatment.

November, 1895. Eleven months after operation, there is no return of the growth. A small, white opacity on the cornea marks the site from where the tumor was removed.

The ophthalmometer shows astigmatism with the rule, 1.50 D., axis 45° + or 135° —.

Dr. F. T. Reyling, pathologist to the Manhattan Eye and Ear Hospital, made a microscopical examination of the tumor, which is as follows:

DEAR DOCTOR.—I find the little tumor to be composed of epithelial cells with a small amount of connective tissue, a sebaceous gland and two or three hair follicles.

Diagnosis: Dermoid tumor.

7 East Forty-First Street.

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ELECTRICITY IN THE TREATMENT OF STRABISMUS.

By Thos. S. Blair, M. D.,
OF HARRISBURGH, PA.

ONE who is in contact with neurotic patients will frequently meet with cases of strabismus in which the usual operative procedures have been productive of but temporary or of very imperfect results. Such an experience has led me to clinically investigate strabismus from the neurologic standpoint It is my aim, in this article, to state the objections to current practice, to call attention to the neurotic factor in etiology, and to suggest treatment for such cases as have nervous elements.

The ordinary case of strabismus, in my judgment, does not come under treatment *early* enough. First seen by a general practitioner, it is commonly temporized with and reaches the eye specialist after the good muscle has so contracted that there is little left for him to do but to cut it or its tendon. General practitioners should *always* give these cases immediate attention, thus saving many an operation, at best uncertain, and seldom giving perfect results. On the other hand, I believe the specialist usually falls into too much of a routine in his treatment of these cases. To him a case of squint is merely "a case of squint," and he has his remedy as ready as he has his "hypo." Too often, at least, is this the case, so that the mechanical factor is considered very much to the exclusion of the etiologic one. Viewing it mechanically, however, it impresses me that in cases seen early enough and before the good muscle has

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become *permanently* shortened, it is poor practice to injure a good tissue in order to accommodate a poor and weak one. I have directed my attention for some time to the problem of giving strength and tone to the weakened muscle and so curing the condition without injuring the healthy muscles. Before taking up the matter of treatment, let us consider the neurotic factor in etiology.

The fact that six of the twelve pairs of cranial nerves send branches to, or are exclusively distributed to, the optic apparatus, and also that the cervical and cerebral sympathetic send branches thereto, is quite sufficient reason for a very distinct nervous factor in the etiology of the disease we are considering. All observers have noticed cases of squint caused by some temporary condition of the nervous system and which pass away with the return to health. Very frequently, however, the squint does not disappear and becomes chronic. This condition is especially apt to follow typhoid and other exhausting diseases and is first shown in feebleness of accommodation. Dr. Wm. F. Norris, in an article in *Pepper's System of Medicine*, says, in this connection, "the most common eye affections show as an optic neuritis or paralysis of some of the muscles supplied by the third pair of nerves and are due to a complicating meningitis." Southern physicians report strabismus as frequently following yellow fever. Others report it following pertussis, which latter I have observed, and found the cases quite amenable to treatment. Some writers claim that the excessive use of tobacco causes amblyopia, and it, in turn, strabismus. Vulpian directs attention to the transient associated movements of the head and eyes due to central lesions and manifested in the spasmodic contraction of one set of the muscles. The eyes are usually both turned in a direction opposite to the hemiplegia. Cases of nystagmus as seen in miners and others who strain the eyes are doubtless analogous to writer's cramp, and equally amenable to non-surgical cure. In tabes dorsalis, transient strabismus due to paralysis of the external rectus is frequently noted. Permanent paralysis of this muscle often

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accompanies affections of the base of the brain. Other nervous factors in the causation of strabismus could be given, but enough has been said to emphasize the necessity of going very carefully into the history of each case before any treatment at all is instituted. None of these observations are essentially new, but the need for greater heed to them justifies their collected presentation in this connection.

In the treatment of strabismus we cannot eliminate tenotomy, as it alone can relieve certain aggravated or long continued cases, but it is my belief that electrical treatment, which has long been recognized in the text books and been employed by a few ophthalmologists, has a much wider application than is usually accredited to it, and should take the place of surgical procedures in many cases at present operated upon. In advocating the use of electricity, I would not urge the neglect of prismatic glasses and of special exercises for the weak muscles, but in my own practice I have usually found little benefit from these methods which are so much in the hands of the patient. The fault has been more with the indolence of the patients, however, than with the methods.

In applying the galvanic current to the eye, I have found it essential to have a milliampèremeter and a rheostat in circuit and to commence with a very weak current. I very seldom go higher than 5 *ma.*, but the susceptibility of subjects vary so much that no hard-and-fast rule as to strength of current can be given. Usually a large sponge electrode at the back of the neck and a fairly small one at the motor point of the weakened muscle gives best results in my hands. An exception to this rule is in cases of nystagmus, which are always aggravated when electricity is passed through the cerebellum. Sometimes I place one electrode in the hand of the patient. It is usually best to use the negative electrode about the eye as it is supposed to be less irritating and it gives a contraction with slightly less current than does the positive. A medium-sized electrode is better than one having a very small area conducting the current. The ordinary faradic coil is not at all well

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adapted to eye work, as the secondary coil is seldom wound to a sufficiently high resistance and the current is, therefore, too irritating. I have had best results with a Gaiffe apparatus having a long coil wound with very fine wire, and interrupting mechanism capable of vibrating as low as forty-eight times a minute. In using the faradic current, I commence each sitting with a light and very rapidly interrupted current, gradually reducing the vibrations to about sixty a minute. Each succeeding sitting I use a slightly stronger current until I adjudge the limit has been reached. Treatments should be given every other day and continued for some time. Experience only will be a guide as to strength of current best for any individual case, and will determine which kind of current to apply. Where there is a central lesion I prefer the galvanic, as also in most of the cases caused by severe constitutional diseases. In paralytic forms or those due to local neuritis, I prefer the faradic. In some cases, both currents can be advantageously employed. Ten to fifteen minutes should be the average length of a sitting. In cases of fairly long standing, where there is spasm or irregular contraction of any one of the muscles, I use atropia locally, and sometimes large doses of gelsemium sempervirens internally. Those who have never given large doses of this latter drug would be surprised how soon toleration can be established. I have given as high as one teaspoonful of the tincture at a dose, but that is the exception and not the rule with me. It relaxes the muscles to a wonderful degree in smaller doses, and it is while the patient is under its influence and the strong, contracted muscle is relaxed, that I faradize the weak muscle. In treating strabismus by electrical means it is absolutely essential to have the best and most accurate apparatus obtainable and to be possessed of great patience. A careless or hasty application of the method will result only in utter failure.

As to results, without going into a lot of tiresome details, I would say that about three-fourths of carefully selected cases of a character in which the treatment seemed indi-

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cated, have responded favorably. My experience with method would not justify me in definitely claiming so la a proportion as always holding good. Men's experien differ, and I have not applied it in a large enough num of cases to dogmatize at all. One-fourth of the cases h failed, but investigation of such cases, as they furt develop, is very apt to show a tertiary syphilitic o degenerative element. In cases due to direct injury an cases of very long standing, I believe electricity to almost, if not entirely, useless. Children respond the m readily, and I have noticed in general that if electri benefits a case at all it does so very decidely, and impr ment is soon noted. It seems to either do a great dea good or do none at all. In quite an encouraging propor of cases it causes complete cure. With accurate appar and careful discrimination, added to the skill which come only from experience, I believe it a method by wl many very crooked eyes can be straightened better t they can by division of the tendons, and many slight ca not sufficiently marked to justify tenotomy, be readily cu

218 Locust street.

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REPORT OF A CASE OF MOLLUSCUM CONTAGIOSUM WHICH GOT WELL UNDER THE USE OF YELLOW OXID OF MERCURY OINTMENT.

By A. Edward Davis, A. M., M. D.,
of New York.

L. M., 2 years of age, German, was admitted to my clinic at the Post-Graduate Medical School October 20, 1895.

History: The mother of the patient says that one or two little tumors appeared on the lower lid of the left eye as long ago as a year. As they caused but little trouble she did nothing for them until about three months ago when two or three more small tumors appeared. For three months the child has been under a doctor's care, but with no benefit.

Condition: On the middle of the margin of the left lower lid, among the cilia, is a small rounded tumor about the size of a split pea with a depression at its summit. From this growth a small amount of sebaceous material was pressed. At the outer extremity of the lid, below the line of lashes, two other tumors of a similar character are situated, while at the inner extremity of the lid, below the line of lashes is still another, also one on the left side of the nose.

No microscopical examination of the contents or of any portion of these growths was made as it seemed so plain a case.

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Treatment: As I did not have time to operate on the growths the first morning the patient appeared, I prescribed:

℞ Hydg. ox. flav.....grs. iv.
Vaselin albae.....℥ ss.
M ft. Ung.....

Sig. Rub a little of the ointment on the tumors twice a day.

This was given simply as a placebo and the patient instructed to return in a week when I expected to remove the growths.

The patient returned at the appointed time, but so much improved, the growths peeling off from the top, that I decided to let the *placebo* alone. After five weeks treatment the patient was discharged entirely well.

Remarks: Had any such favorable result as this been looked for from the use of the ointment of the yellow oxid of mercury (half official strength), I certainly should have had a microscopical examination of the tumors made. The history of the case, however, together with the appearance of the growths, leave but little question of the correct diagnosis.

If molluscum contagiosum is a contagious affection, and its contagiousness due to a specific germ, as is supposed by the majority of authors, I can readily see how the yellow oxid of mercury, a germicide, could have a curative effect in such cases.

I report this case in order that others may try this simple remedy and either prove or disprove its efficacy.

7 East Forty-first Street.

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A PRELIMINARY REPORT OF A PERIMETER BASED ON A NEW PRINCIPLE.[1]

By Dr. Joseph E. Willetts,
of Pittsburg, Pa.

late clinical assistant to dr. h. knapp, at the new york ophthalmic and aural institute and vanderbilt clinics, new york; executive ophthalmic surgeon to the eye and ear hospital of pittsburg.

I do not think that I am alone in having lost patience while taking the field of vision with our present instruments. Who has not recognized the tediousness and inaccuracy of our present method of examining the color sense, or the examination for color blindness with Holmgren's Wools.

The objections to the present method of ascertaining defects in the visual field are, indeed, numerous. In 1892, I took the field of vision of a man with a perimeter at the Manhattan Eye and Ear Hospital, for twelve consecutive mornings, at the same hour, and as near as possible under the same conditions, in order to ascertain the degree of accuracy of the perimeter. The patient was an intelligent man who was paid for his time, and who was there for that purpose and nothing else. I carefully instructed him to be observant and truthful in his statements. On comparing the results there were no two alike. I am sorry that I did not keep the charts so that I might reproduce them; however, it needs no verification as the experience is a general and not an isolated one.

[1] Read before the Pittsburg Academy of Medicine, December 16, 1895.

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This is strong evidence of the inefficacy of the perimeter, even with an instructed patient. What then can we expect of this instrument with uninstructed patients, where the operator must rely on the personal equation of the patient, and his own ability, not only to approximate the degree on the unmarked portion of the perimeter, but also to approximate how much of the field of vision is cut off by an unusually high nasal bridge, a prominent brow, or a malar bone. How is this approximation of restricted field from a prominent feature made? Is it computed by figures? Is there a known amount of restriction of the visual field for each *mm.* of prominence of individual features above normal? No, the result is accepted, regardless of personal equation, the physiognomy, or the position of the patient, and an approximate allowance made for the numerous inaccuracies of which the position of the patient is not a minor one by any means, especially in those cases of a neurotic type—cases of hysteria in which we are called upon to take the field of vision, and who will not remain in the proper position. In such cases the forehead may be inclined forward, with the eye close to the projection in a straight line with the stationary disc, thus giving the field a wide scope in one meridian; while in the next meridian, the chin will be thrust forward, and the eye drawn backward, and the inferior field greatly restricted, to say nothing of the patient's inability to control the tendency to look at the moving disc instead of the stationary one which also materially adds to the unreliability of the results obtained.

Recognizing that the unsatisfactory statements of the patient materially influence the result, that there must be an approximate allowance made in each case for the constantly varying physiognomy; and that the time and inconvenience necessary for a conscientious examination of the visual field were decided objections, I endeavored to construct, or combine a number of prisms or cones, which would transmit or refract rays of light to that part of the retina corresponding to the degrees in the present peri-

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metrical chart. Fixing myself in the position of the patient, I, with the prisms at hand, succeed in deviating the stationary disc to 70° on the perimeter. To make the result correspond as nearly as possible to the present accepted ellipsoid, color and form field, as the perimeter gives it to us would be necessary to have prisms of different strengths combined in a whole. On this principle I had an octagon ground. Recognizing later that this shape would be expensive and the results inaccurate, I constructed a cone-shaped hexagon, having all prisms of the same strength. Thus, a cone or cone-shaped hexagon with its sides cut at an angle 70° 40′, made of flint glass with an index refraction of 1,584, will throw six lights at the same time on the retina at the angle corresponding to 70° as taken by the perimeter.

Plates in text-books showing 55° to 60° to be the normal for white of the superior, inferior and temporal portions of the retina are misleading, and certainly are not correct any more than the plates showing restricted color field are.

The prism I have constructed has demonstrated to my satisfaction that there is no restriction of the normal field for any color or any object. The present restriction is not due to the inability of the retina to receive impressions at its periphery, but entirely to outside influences—the physiognomy, and the crude instrument by which the field is taken. All colors are recognizable with this prism at the periphery of the field, as well as inside of the color field, as at present recognized. That it is not so plainly seen at the periphery is partially due to the fact that to deflect an image to the 70° angle on the retina the rays can not pass through the angle of minimum deviation of the prism and thus transmit a clear image of the object; but instead, a distorted one is transmitted to the retina, which confuses the patient. If it were possible to throw an image on the periphery which was not distorted it would be very distinctly seen. That this is a fact is proven by directing the visual axis to one of the false images on the periphery, which necessarily causes it to fall on the macula. If its

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indistinctness on the periphery were due to the insensibility of the retina, it should be distinctly seen when focused on the macula, which it is not, showing that its indistinctness is due to distortion alone. With this combination of prisms, or with the cone, which is the same principle, the field of vision and the color sense may be taken in an instant. If the 73° 40′ hexagon or the 70° 40′ cone is placed before the eye, and an incandescent light with a red globe turned on, and the patient sees six lights with the hexagon, or an unbroken ring of light with the cone, it is positive evidence, after a slight rotation of the hexagon, or without rotation of the cone, that not only the field of vision is normal at the angle of 70° for all meridians, but also that the color sense for red is normal at that angle. A row of incandescent lights, green, blue, yellow, or any of the complement colors, can be successively turned on, and the field and color sense for that angle established decisively in an instant. The cone, or the hexagon of prisms, which refracts at 60° can then be slipped in the trial frame, and so on down to 10°. If the 70° 40′ hexagon, or the same degree cone, be placed before the patient's eye, the other being covered, and he can see no light, there is a concentric contraction inside of the 70° angle which indicates optic atrophy, or retinitis pigmentosa; while in glaucoma, corresponding to the nasal contraction, there will be but three lights seen, or a broken light with the cone. If one is missing, some localized lesion and if the color is not recognized, the pathological condition is readily understood. The lights are thrown on the retina in the shape of a hexagon, with a band of colored light connecting each individual light at different degrees of deviation, according to the strength of the prism or of the cone used.

That light can be thrown on the retina in a practical way at successive angles of 70°, 60°, 50°, 40°, 30° and 20° is a difficulty which I have overcome, and which I will explain and giving the formula in a future communication on this subject. These formulæ have all been worked out, but the time is lacking to incorporate them into this report. The

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following shows the angles of the prisms required to give the necessary deviation, when made from flint glass, with an index refraction of 1,584:

Given deviation	75°	70°	60°	50°	40°	30°	20°	10°
Angle of prism or cone required	75°11′	73°40′	69°21′	63°13′	55°8′	44°50′	32°2′	16°49′

The hexagon has the advantage over the cone because it does not only tell us of the lesion, but also the extent of it. Say in detached retina, for example, putting on the hexagon, and, as an illustration, say one light is missing, the hexagon should be slightly rotated until the patient would see the missing light, and the point of its reappearance noted as well as the site of the disappearance of the one following it, which would give us positive evidence of the extent of the detachment for future reference.

As is well-known, the objection to the use of high-degree prisms in ocular work has heretofore been the prismatic spectrum. This spectrum which has been previously an objection, is, in my prism and cones, used to an advantage; for, in the higher degrees, it is sufficiently pronounced to be used as a color test, it having all the necessary colors, and I have demonstrated in the clinic of the Eye and Ear Hospital that the individual colors are recognized by the patient. It is not necessary to dilate on its efficiency as a confusion test in simulated blindness. If a patient is made to see six lights, the angle of which may be changed at the will of the operator, he naturally will not know what to expect in subsequent examinations. This is another advantage of the prism; the cone is of no importance in this test. It is only the weaker prisms that are of any value as a test for muscular insufficiency, on account of the deflection being so great in those of higher degrees, the lights are not as distinct as the one in the middle, it being the image focused on the maculæ of the other eye. In the weaker prisms, ground at an angle of 32° 2′, the ray of light is deflected to 20° on the retina, and the contrast is not so great. If there is any insufficiency of any muscle, the middle light, instead

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of being in the center of the ring of the six lights will be close to one of the other lights, and the muscle that is affected will be readily suspected according to that one of the six lights to which it is in closest opposition. The weaker prisms may have the point ground off and polished, and the central vision taken at the same time; or, to assist in detecting insufficiency, a red glass, covering the eye not being examined, could be fused into the one corresponding to central vision of that covered by the hexagon.

In the high-degree prism the deflection is so great that if put in the trial frame the rays are lost and do not enter the eye. It is necessary that the prism be held close to the eye, in fact, touching the lids. This is the only objectionable feature I have discovered, but it does not compare with the many I have found with the perimeter. Another point to bear in mind is that the patient must locate the false image with the eye in the normal position. If the strong prisms are put in first the patient, in trying to locate the lights instead of looking at the distant light, turns the eye in the direction of the false image which, of course, changes its angle in the retina; this is readily overcome by putting on the weak prisms first and instructing the patient.

The prism and cones are now being made in this city; they will come in sets of seven, in a neat box, some of them arranged for the trial frame, and the others adapted for close application will be fitted with a handle. They cannot be manufactured for less than $25 per set, at least for the present, because the necessity of having the exact angle and no machinery being specially adapted for this work, a number are spoiled in the grinding after considerable labor has been spent on them.

To recapitulate, the advantages of the prismatic perimeter over the old one is:

1. That the field of vision can be accurately taken in an infinitely shorter space of time.

2. That the color-sense can be taken at the same time that the form-field is taken.

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3. That the result can be depended upon, inasmuch as it is always taken under the same light-stimulus, while under the old method one might ask: Under what conditions was this field taken? Was the light good? Was the stationary disc and the moving disc perfectly white, or were they mottled and dirty, and was there anything unusual in the patient's physiognomy?

4. That it is a new confusion test for simulated blindness.

5. That it is a new muscle-balance test, especially of the oblique muscles.

In an article to appear later I hope to present the subject in all its bearings, and to prove my assertions with the needful formulæ and data. While the statements made at this time are believed to be correct, I reserve the privilege of making modifications or adding new facts that further investigation may demonstrate.

I am indebted to Prof. James E. Keeler, of the Allegheny Observatory, for valuable information regarding the angles required to deflect the rays of light to the necessary degrees on the retina; to Drs. Adolph Koenig, Charles S. Shaw and Ewing W. Day, for the interest they have shown and the many timely suggestions given; to Mr. MacDowell, of Allegheny, and also to Messrs. McCullough & Spangler, opticians, who made for me the prisms and other apparatus necessary in my experiments.

Westinghouse Building.

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INFLUENCE OF THE GENERAL NUTRITION UPON THE COURSE OF OPHTHALMIA IN THE NEW-BORN.*

By H. V. Würdemann, M. D.,
of Milwaukee, Wis.

Director and Secretary Wisconsin General Hospital Association; Oculist and Aurist to the Children's Hospital and to the Milwaukee County Hospital for the Chronic Insane; Secretary Section on Ophthalmology American Medical Association, 1895.

THE state of the general nutrition is a recognized element in all local or general affections, and is especially noticeable in the infectious diseases. Where tissues do not receive proper nourishment through defective assimilation, insufficient or improper food or deficient local nutrition, they do not afford the usual resistance to infective germs and their toxins. We may, perhaps, be led to infer from some writers and recent efforts toward securing legislation† for the prevention of blindness that ophthalmia

* Read at a meeting of the Northwestern Medical Association at Stevens Point, Wis., January 14, 1896.

† It must not be inferred from this paper that I am adverse to legislation, as I have secured resolutions[8] of this nature in Wisconsin, and expect to present same to our Legislature.

* ℞	Hydrastiæ sulphatis	.30
	Acidi borici	.30
	Sodæ biborici	.30
	Tr. opii deodoratæ	2.
	Aq. dist. ad q. s	30.00
M.	Filtra. s. instill in eyes after cleansing.	

This is the formula so highly advocated by our esteemed confrere, Dr. X. C. Scott,[4] of Cleveland, who read, in 1894, a highly enthusiastic paper upon its action in purulent ophthalmia, stating that this "plan of

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neonatorum or its sequelæ are in all cases preventable.

In 1893, Randall[3] honestly reported a case which resulted in utter blindness despite the fact that the child was delivered by an accoucher, attended by an oculist and had the services of a trained nurse during the whole progress of the disease. I referred to this instance in discussion of X. C. Scott's[4] paper before the American Medical Association, and stated that as yet I had not had a similar experience. Since that time it has been my lot to have had several cases in the practice of physicians of ability, having the services of trained nurses besides my own attendance from a few days after delivery and which under ordinary circumstances would have resulted favorably; but in which, owing to poor assimilation, there had been serious implication of the corneæ and resulting blindness.

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treatment has robbed this disease of all its terrors; these cases have been cured within a week or ten days in every instance instead of running, as the books say, a course of four or five weeks in the most favorable cases. When the solution is properly used in cases of purulent ophthalmia there will be a marked improvement in the case within twenty-four hours, and within forty-eight hours there will be a remarkable diminution of the pus, chemosis of the conjunctiva and swelling of the lids." Dr. Thompson[6] says in his published letter: "He (Dr. Scott) tells me that he does not use silver now." Dr. Scott writes[5] me that he "follows the same course and has never had occasion to regret it in treatment of all cases of purulent ophthalmia, and that in reports from different parts of this country other medical men have been unanimous in their experience as to good results." He now uses weak solutions of nitrat of silver with the hydrastin solution. It must be that the good results obtained by him are more due to stringent cleanliness and the silver than to the specific action of the hydrastin collyrium. Although in discussion of this article I took exception to his statements from a theoretical point of view. I have used this preparation in a dozen out of twenty recent cases of blenorrheal ophthalmia, and now, from the practical side, can not agree with his views. The hydrastin is certainly beneficial, but not more so than boric or silver or other antiseptic solutions used in the same way. I do not find that it has much specific influence in mitigating the conjunctival inflammation or that it materially cuts short the course of the ophthalmia. Owing to the prominence of its advocate and the wide publication given to the article, and to the fact that another esteemed colleague[6] has most favorably commented upon this method of treatment, I feel it incumbent upon me to state my experience, in hope that others may not be led astray and depend upon hydrastin to the exclusion of silver and other recognized forms of treatment.

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Case I. August 22, 1895, Dr. J. called in my associate, Dr. C. W. Root, in consultation over a full-term infant whom he had delivered six days before, who had ophthalmia of four days' standing, with no corneal implication, and which was esteemed by the consultant as not severe. Both parents denied gonorrhea separately and on several occasions. Mother acknowledged leucorrhea of several years' standing existing before marriage, but which, since childbirth, has disappeared. She had no treatment and had not called attention of the physician to the fact. The latter reported a cleanly delivery; that the eyes were cleansed by him with boric solution and usual cautions given. As is customary in practice among the artisan class, he ceased attendance after three visits and left directions. At the last visit he noticed that the eyelids were red on the edges and gave a boric collyrium. Two days later he was informed that there was matter in the eyes and immediately sent for Dr. Root, who gave the usual guarded prognosis, obtained a trained nurse, ordered treatment as follows: 1:10 000 sublimat wash every half hour, atropin (one per cent) in ointment, and collyrium of hydrastin* making applications of two per cent argent. nit. to eyelids once a day for a week, when the discharge had almost ceased and eyes were apparently doing well.

When the child was three weeks old I saw it with my colleague and considered that it would soon be well, and so informed the family, but on the occasion of the next visit he found the cornea slightly hazy, and seeing the case on the next day I corroborated his opinion. Four days before (the weather being at this time intensely hot,) the mother had developed gastro-enteritis and the baby had immediately been[2] effected by her condition. She had noticed that the milk was less in quantity and thinner; that the child had colic and was very restless after nursing. The discharge from the eyes was scanty and necessitated cleansing only once in every two hours. Silver treatment had been given up for ten days. The wash was changed to boric acid three per cent, atropin-iodoform ointment,* and the hydrastin collyrium continued. Mother given Pabst malt extract. The nurse had been discharged by the family several days before. The corneæ

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* ℞ Atropin alkaloid ..... .30
Iodoform pulv 1.50
Petrolati 30
M. Ft. ung. s. In eyes every 4 to 6 hours.

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gradually became more opaque without ulceration, the epithelium remaining intact throughout the whole course of the disease and the corneæ staining but slightly to pyoktanin (1:1,000) which was later used. The child lost flesh for a few days, but soon recovered as the mother's condition improved. On September 18 the case was sent to Wisconsin General Hospital with the mother, and remained there a number of weeks. When discharged it had partial staphylomata and leucomata of the corneæ, which afterwards cleared about the limbus. Child became well-nourished generally. On December 10 I made a double optical iridectomy with the object, if possible, of affording some vision and of diminishing the intra-ocular pressure, and on December 27 was obliged to do operation for corneal staphyloma on the right side. Since then the case has progressed more favorably.

Case II. September 20, 1895, Dr. K. called me in consultation over a female child, 1 week of age, a premature delivery at seven months. As usual in these cases, child was heavily coated with vernix caseosa. An uneducated nurse had been engaged by the family, but delivery had been made by the physician, with aseptic precautions, the child's eyes washed with boric acid solution and carefully watched afterwards. On the seventh day I was called in consultation, learning that for three days there had been mucopurulent discharge from the eyes, but found the corneæ intact. A trained nurse was called in and treatment instituted of 1:10,000 sublimat wash every half hour to hour, iodoform-atropin ointment, and hydrastin collyrium, making nitrat of silver applications for several days, when the discharge rapidly abated. Although the swelling of the conjunctiva was not great, canthotomy was done.

The mother gave history of leucorrhea and ovarian disease, for which a gynecologist had at one time recommended ovariotomy. She was unable to nurse the infant, which was put upon sterilized milk. The mother had severe post-partum hemorrhage and was low at several times for two weeks after delivery. On the fourteenth day of age the child apparently weighed less than at birth; the corneæ were opacifying in a striated manner under the epithelium, beginning from the centers and extending towards the limbus, but did not stain from the yellow collyrium. The discharge was scanty, necessitating cleansing only every second or third hour. The wash was changed to boric acid (three per cent) and other applications stopped with exception of atropin-

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iodoform ointment. The general condition gradually became worse and the corneæ softened, going into a condition of keratomalacia. On the twenty-first day of its age it died of inanition.

Case III. October 29, 1895, Dr. M. called me in consultation over a male infant, full term, 3 weeks of age. History of sanguino-purulent discharge from eyes on third day. Treated by listerin and boric acid washes which were said to have rapidly subdued the swelling although the discharge persisted. On close questioning we found that the father had contracted gonorrhea about three weeks before the birth of the child, and at that time there was a suspicious discharge from the maternal genitalia. Antiseptic precautions were used and eyes washed. There was an old woman nurse in attendance, but she seemed faithful and apparently carried out instructions to the letter. I found a creamy purulent discharge of moderate quantity, conjunctiva slightly swollen and no evidence of ulceration. I gave guarded prognosis and inquired about the probable cause which was as before noted. I spoke about the necessity for the mother keeping up her nutrition, and suggested that if the milk should fail the course of the case might be unfavorably influenced. Ordered three per cent boric acid wash every fifteen minutes or longer; atropin-iodoform ointment, hydrastin collyrium, and had two per cent silver applications made by the physician for two weeks.

On the third day after I was called the mother developed fever and her milk stopped. Since that time to date of writing she has been subject to rises in temperature and rheumatic pains. A special examination has been made which reveals typical gonorrhea with discharge from the os uteri. The child was put upon Fairchild's peptogenic milk powder with sterilized milk, but did not digest same, large curds coming away in stools. Change was made to Nestle's food which was better borne, although the nutrition remained very poor, and it was subject to many attacks of colic for which general medication was given by the attending physician. About the thirtieth day of the child's age, although the discharge was very slight and cleansing treatment was necessary only every second or third hour, one cornea was noticed to have a pearl-like luster, and on the next day was seen to be infiltrated, the infiltrations converging from the limbus to the anterior pole of the cornea. The other eye soon followed in the

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same course, the anterior epithelium for two weeks remaining intact, but then coming off like a piece of exfoliated epidermis. At the beginning of the infiltration, pyoktanin 1:1,000 was ordered dropped in the eye, two to five times daily, boric acid wash and iodoform-atropin ointment continued, and yellow collyrium stopped. On the seventh week both corneæ became staphylomatous. The child gradually grew weaker and died January 5th in the thirteenth week of its life.

Special points of interest in these three cases are:

1. The occurrence of corneal infiltration without superficial ulceration, followed by corneal staphylomata and leucomata with resulting blindness in cases of seemingly moderate degree in which a favorable, although guarded prognosis would customarily be given. The amount of conjunctival inflammation was not at all in proportion to the corneal disease. At no time were there pressure symptoms although in one case canthotomy was made.

2. Cases I and II have no gonorrheal history, and subsequent examination in the mothers by their attending physicians seem to negative this condition. Case III, although a fresh specific infection had but moderate inflammatory symptoms.

3. Cases I and II preserved the corneal epithelium practically intact, and case III kept it for seven weeks.

4. The exciting cause of the corneal malnutrition was, in the first instance, temporary disturbance of general nutrition due to intestinal trouble in the mother; in the second, premature birth and bottle-feeding, and in the other, marasmus from bottle-feeding.

5. Death from marasmus in cases II and III.

It is said that in the city of Milwaukee there are more children delivered by midwives than by physicians. The greater majority of blenorrheal cases coming to me have occurred where the former were employed for the accouchment. It seldom happens that I do not have under treat-

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ment cases of this class, and sometimes there are several. Many are brought to me after corneal collapse, but the majority even of these recover with more or less vision. I have had previous cases of ophthalmia occurring in marasmic infants where the nutrition of the cornea was seriously affected, but these were attended by grave ulceration which had occurred before skilled advice was sought.[7] I cite these three cases with some diffidence, but believe that a conscientious report of this nature may perhaps be instructive as the extensive literature upon this subject is most generally about more fortunate cases and expresses more favorable views. Cases certainly appear that are properly attended, in which other factors than that of the specific inflammation obtain and which should modify our prognosis. Hinde[1] recognizes this when he says that floating pus microbes are present in the blood of many marasmic patients, and may be, in some cases, responsible for the *locus minoris resistentiæ* within the ocular tissues.

It is a recognized fact that prophylaxis lessens the number of these cases; that the disease itself in some instances has been aborted; that its course in the great majority of cases is favorably influenced and blindness prevented by similar treatment as taken in the foregoing instances. Such sad cases may occur in the practice of any physician who may do his best without meeting with the kindly judgment awarded to me. Invidious criticism might arise if the public or profession believe that by proper treatment given sufficiently early blindness may in *all* cases be prevented.

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ASTHENOPIA AND PERIPHERAL ABERRATION.

FRANK A. MORRISON, M. D.,
OF INDIANAPOLIS, IND.

IN the October number of the ANNALS there appeared an article from the pen of Chas. F. Prentice upon the "Iris, as Diaphragm and Photostat." In this the writer advanced the idea that, in a certain proportion of cases of eye pain, the source could be traced to the state of the pupil, It did not appear that the conclusions reached had been verified by clinical experience, but rested solely upon optical principles involved. In the hope of ascertaining how far the deductions of Prentice might be borne out in practice the writer undertook a series of experiments. In order to secure accuracy in every case examined the muscular balance was noted, and where the relation between the adductors and abductors did not bear at least the ratio of three to one (providing always that the abductive power did not fall below eight degrees) the case was excluded. The range of accommodation demanded was that accepted by Donders for the different ages and given in his work, "Accommodation and Refraction of the Eye." In short, the whole matter resolved itself into an examination of the condition of the pupil and the state of the refraction. In estimating the latter, the method of skiascopy, as perfected and taught by Dr. Edward Jackson, was the objective test relied upon. Not wishing to burden this paper with an enumeration of all the cases studied, I have ventured to insert but one or two typical of the conditions found.

The cases coming under observation easily arranged themselves into three classes, viz.: Those with large pupils and asthenopia; those with large pupils without asthenopia; and those with exceedingly small pupils. As illustrating, class one

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is the case of Minnie M., 15 years of age, in poor health, having recently recovered from an attack of typhoid fever, menstrual function imperfectly performed, pupils under bright illumination 7 *mm.* in diameter, diminishing to 6 *mm.* in accommodating for 23 *cm.* Cannot go to school by reason of the pain in the eyes on studying. Vision, $\frac{20}{30}$; muscular balance perfect and accommodation normal. After the instillation of a one-tenth per cent solution of scopolamin hydrochlorat vision fell to $\frac{20}{40}$. Keratometry gave .25 D., ax. 90°. Skiascopy showed the visual axis to be emmetropic shading off to — 2 at the extreme margin of the lens. No glass would bring the vision above $\frac{20}{30}$. The pin-hole disc alone, however, gave vision $\frac{20}{20}$. The interesting features here were the extreme peripheral aberration and the low visual acuteness relieved by the pin-hole disc. This case appears to confirm, in a remarkable degree, the views of Prentice.

Of the second class we need not go so into detail; they were all cases of emmetropia or weak ametropia presenting the additional condition of but slight peripheral aberration, never exceeding .50 D., and rarely more than .25 D. at the extreme margin, a still further confirmation of the views above expressed.

In the third class I found but one case and that was valueless, owing to the fact the patient had but a short time previous suffered from some nervous trouble probably of a cerebral nature.

In a discussion of this subject we are limited practically to class one. The case mentioned under this head is one of many coming, first, under the notice of the general practitioner, and finally making the rounds of the various specialists to receive treatment for a reflex pain in the head which, in view of the fact that the oculist may have reported the refraction and muscular balance to be normal, is set down as a condition of retinal hyperesthesia or an example of reflex pain from a disturbance of some distant organ. In this class retinal irritation from the continued presence of diffusion circles must be responsible for a large part of the result, or we must assume that the continual and vigorous contractions of the ciliary muscle directed to overcoming the peripheral aberration stands in the relation of cause. The physical facts set forth by Mr. Prentice have been so fully illustrated as to need no further comment. The sole question with the physiologist and oculist is the cause of the failure of

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the iris to respond to the normal stimulus to contraction and the seat of the uneasy sensations connected with the eye. My belief is that these sensations are due to retinal confusion rather than to ciliary strain. In support of this idea is the case of Wm. C., 46 years of age, nervous temperament, much given to headaches and eye pains from reading or riding on railroad trains. He had an extensive collection of glasses prescribed in this country and in Europe varying from + .75 D. to + 1.25 D., and all of which had given him comfort, while at other times none were of the slightest benefit. Pupils varying, on some days widely dilated, and on others, contracted under the same degree of illumination. When the pupils are contracted he is fairly comfortable, but when dilated nothing relieves. Skiascopy gave — 1.25 D. in the visual axis and — 1.75 D. at the margin. In the first case cited the normal state of the refraction in the visual line negatived the idea of ciliary strain unless the ciliary muscles suffered from the reflex demands of the aberrant margin. As there is no definite size that can be assigned to a normal pupil, the only way of determining the cause of an asthenopia after the exclusion of muscular anomalies and ciliary strain would appear to be a skiascopic test of that part of the dioptric apparatus which lies within the habitual pupillary area of the individual. Any marked difference in the refraction between the center and the periphery leading to grave suspicions if not certainty of retinal fatigue. If such failure to maintain "the proper relation between refraction, accommodation, illumination and freedom from aberration," (Prentice) be ascribed to the lack of retinal stimulus from ametropia and the consequent want of a sharp image upon the retina, then the rational treatment would be the correction of the refractive error; if due to a lack of power in the iris, then a different line of procedure must be adopted. Although the cases studied by me are too few to venture an opinion, yet the result lends color to the view that, in the vast majority, attention to both the refractive condition of the dioptric media and the other forces governing the iritic movements outside of retinal stimuli will be followed by the best results.

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"AUTOPHAKOSCOPY."

By S. Mitchell, M. D.,
of Hornellsville, N. Y.

Oculist and Aurist to St. James Mercy Hospital; Oculist to the Erie Railway.

In No. 3 of Vol. 114 of *Annales d' Oculistique*, appears a paper by Dr. A. Darier, of Paris, on Autophakoscopy. No doubt all who read this interesting article, when it was finished, proceeded to do the very same thing that I did, viz.: Take a peep at their own lenses and corneæ, and watch the movements of the muscæ volitantes by the method therein described.

A view of the muscæ in one's own vitreous is, however, not such a striking novelty to all of us. Its appearance, when looking upon a clear white surface, is with myself, as with many others, an every-day occurrence. Of course the view that is obtained of them by the method described is perfectly satisfactory.

One can here study their form and size, as well as their movements, very leisurely and not have them hop out of sight, like "Paddy's flea," every time you attempt to "nail" them.

I have a very choice one in my right eye, of the necklace variety, that frequently intrudes when making an ophthalmoscopic examination. This, with a number of the ring species, were an endless source of amusement to me on shipboard, while on a recent trip to Europe. If reading or the games on deck become wearisome, I had but to look away towards the horizon and with a fillip of the eyes, summon these, my floating subjects before me, in all their variety of shape and size.

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It is surprising what a vast amount of entertainment one can get out of such a simple matter, especially when the qualms of sea-sickness are upon you and that "far away" look comes more often to the eye.

In trying Dr. Darier's experiment, I followed very closely the directions he gave, and was able at the first trial to prove very satisfactorily to myself that I did view the striations of my own lenses, and observe the movements of the "physiologic floating bodies in the vitreous humor." Members of my own family, also several patients whom I directed to try the same experiment, were equally successful, especially in the observation of the movements of the muscæ.

These observations had nearly passed from my mind, or at least passed into that part of the mind that we make the receptacle of matters that we are not likely to call into use very often, when it was all brought to my notice again in a peculiar manner. The particulars of which I will relate.

One evening, while attending a lecture, my head was bowed and my chin rested upon the thumb of my right hand. In this position, my right eye, which was partially closed, was brought within three or four inches of a plain gold band worn upon the little finger of the same hand. As I gazed carelessly at a small luminous spot upon the convex surface of the ring, where the rays of light from an arc lamp that hung above and to my left met the polished surface, I suddenly became aware of the fact that I saw before me a counterpart of the bright, luminous disc which is seen when viewing a candle flame through a concave lens of forty diopters, as directed by Dr. Darier. From this moment the words that came from the lips of the speaker fell upon at least one pair of deaf ears.

For even though the bodily attitude may have simulated devotion the mind was far from it. In this particular my case was, doubtless, not an isolated or unique one among the audience. I became at once deeply absorbed in studying the miniature world before me. The lenticular striations were as distinct as I had ever seen them, while by a quick movement of the eyes from side to side, or by imparting a rolling motion to them, the graceful, undulating movements of the muscæ, as they tumbled and rolled across the luminous field were particularly noticeable.

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The small drops of mucus and tears could also be observed as they passed slowly across the cornea, after each closure of the lids.

I have since repeated the experiment in the same manner in my office, sitting under a small incandescent lamp. Of course the effect is greatly intensified if the luminous disc is viewed upon a dark background.

My episode may be of no particular moment. My only excuse, however, for "rushing into print" with it is this: That inasmuch as this observation was made in such a peculiar manner and from rays of light reflected from a convex surface of an opaque substance, there might be in it a suggestion of greater possibilities, to some one who possessed the time and inclination to further pursue this interesting subject.

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CLINICAL MEMORANDA.

DIVERGENT STRABISMUS ASSOCIATED WITH HYPEROPIC APHAKIA IN ONE EYE AND SENILE CATARACT IN THE OTHER. PARALLELISM AFTER OPERATION.

By S. L. McCreight, M. D.,
of Chicago.

The following histories are of cases that presented themselves at the clinic of Dr. Casey A. Wood, Chicago Post-Graduate Medical School:

Mrs. J. A. P., 53 years of age. Family history good; never had any trouble with her eyesight until 1882. About this time she discovered that she had more difficulty in threading a needle than formerly. Objects did not appear as distinct as heretofore, and very frequently they seemed double. On account of the diplopia more than anything else she consulted an oculist in the year 1884, and was told that she had a cataract in the left eye. Glasses were prescribed and worn constantly, but with very little benefit to the patient. In September, 1888, the cataract had matured (V. = fingers at four feet) and the operation of extraction was performed after which the patient was enabled to tell the time by the watch. Sometime previous to this operation the right eye became similarly affected and grew gradually worse. During the summer of 1893, she consulted Dr. Wood, who discovered, in addition to a cataract in the left eye, that she had a divergent strabismus amounting to 30° on the perimeter, An operation for the cataract was advised and on October 29, 1895, it was performed without iridectomy with a very satisfactory result. Dr. Wood also operated on the left

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eye for secondary cataract December 11, 1895. Vision was greatly improved in both eyes after this operation and the divergent squint began at once to improve and has continued until now; it is scarcely noticeable even for fixation of distant objects. At first she had marked diplopia, but is now able to fuse the double images without difficulty. The patient is wearing the following lenses with a good deal of satisfaction, but is not able to get distant binocular vision, although for reading she can: 130° + 1.00 + 13.00 with R. V. = $\frac{20}{20}$; L. E. + 13.00 = V. $\frac{20}{30}$ For reading, 4 D. was added to the sphericals in each eye with which she readily reads Jaeger No. 1, with each eye separately.

UNILATERAL HERPES OF THE CORNEA.

H. L., 31 years of age, has for many years had frontal headaches, the result of acute rhinitis, but has never suffered from any eye disease. Two months ago he began to have "neuralgia" of the left side of the head and over the left eye. After three days of pain in the eye, with photophobia, scleral redness and a feeling of heat about the orbit, he noticed that the vision of his left eye was not as good as usual. He then began to use a liniment of chloroform, camphor and Jamaica rum. This was applied to the forehead and eyelids, with the effect of making matters still worse. The pain in the eye, now accompanied by lachrymation, grew worse. Six weeks after the first attack of neuralgia he presented himself at the clinic. He had a well-marked herpetic eruption following the course of the left supraorbital nerve and extending from the eyebrow to the vertex. The half-dried and broken vesicles alternated with reddened pits.

The eye is inflamed, the ball being red and injected. There is marked ciliary congestion. On the border of the left upper lid and upon the palpable conjunctiva are small abrasions. The murosa of the lid is much swollen. The superficial epithelium of the cornea is irregular and the window reflex is broken in passing over it. The vision of the right eye is $\frac{20}{30}$ — and Jaeger 1; that of the affected eye is $\frac{20}{100}$ — and Jaeger 2. After treatment for a month a faint, almost central scar can be seen in the left cornea. V. = $\frac{20}{70}$ — and Jaeger 2.

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RETINITIS PIGMENTOSA WITHOUT NIGHT BLINDNESS—RECURRENCE OF THAT SYMPTON AFTER OPTICAL IRIDECTOMY.

Miss M. O., 25 years of age, domestic, has always had poor vision ever since she can remember, and became noticeably worse in the past two years. She is able to attend to her household duties, but can not read or do any near work. Her parents are cousins, and one brother has a typical retinitis pigmentosa. When first seen her vision was, in either eye, fingers at eight feet. Patient has anterior polar cataract in both eyes, with involvement of the nucleus and lateral nystagmus, but gives no history of recent hemeralopia. November 13, 1895, optical iridectomy was performed on both eyes by Dr. Wood, which resulted in marked improvement of vision. Now that light is again admitted to the macular regions, she notices very plainly a reduction of vision on entering a dark hall or when night comes on.

The ophthalmoscope shows the usual fundus change of retinitis pigmentosa and her visual fields are contracted to within 10° of the fixation point.

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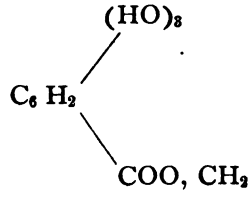
ABSTRACTS FROM FOREIGN CURRENT OPHTHALMOLOGICAL LITERATURE.

By Casey A. Wood, M. D.,
OF CHICAGO.

GALLICIN IN OCULAR THERAPEUTICS—THE OCULAR COMPLICATIONS OF SMALLPOX—THE EMPLOYMENT OF ARGENTAMIN IN EYE DISEASES—STERILIZATION OF THE CONJUNCTIVAL SAC—ON THE PHYSIOLOGICAL ACTION OF ARECOLIN, A NEW MIOTIC ALKALOID—ICHTHYOL IN CERTAIN FORMS OF OCULAR DISEASE—RIPENING OF IMMATURE CATARACT BY THE DIRECT METHOD—CORNEAL TRANSPLANTATION—THE TREATMENT OF SIMPLE CHRONIC GLAUCOMA.

GALLICIN IN OCULAR THERAPEUTICS.[1]

This is a compound obtained by heating a solution of gallic acid with methylic alcohol in the presence of gaseous hydric chlorid or concentrated sulphuric acid. It is represented by the formula



and is thrown down as a whitish, granular and very light powder. It crystallizes from *methylic alcohol* as anhydrous rhombic prisms, and from water in the form of feathery needles. It liquifies at 200° C., readily dissolves in warm water, in methylic and ethylic alcohols and in common ether.

[1] Bocci. La Gallicina in terapia oculare, p. 31. [This short translation, together with the following abstracts, is selected from the papers read before the Fourteenth Annual Congresso dell 'Associazione Ottalmologia Italiana, held at Venice the 26th to 29th of August. They were recently published as a supplement to the *Annali di Ottalmologia*, fasc 4.]

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Gallicin in many respects resembles resorcin and pyrogallol, both of which are useful agents in treating catarrhal affections of the mucosæ and skin, but it is greatly to be preferred to the latter remedy, since it is non-poisonous. It has already been used by Mellinger in both the catarrhal and follicular forms of conjunctivitis, in eczema of the lids, in phyctenular and pustular kerato-conjunctivitis, in simple keratitis and in corneal ulcer with hypopyon. It is commonly applied as powder to the eye-ball with a camel's hair brush once or twice a day.

In the writer's clinic it is used in various forms, sometimes in solution, sometimes in powder, occasionally as an ointment.

In the form of powder it acts as a foreign body and produces pain, although the irritation ceases at once when cold applications are applied to the eye.

Six, eight and ten per cent solutions in warm water are of a beautiful rose color, are well borne by patients and give but little pain.

It acts promptly and with good results in the ocular affections above mentioned as well as in ulcers of the cornea accompanied by infiltration of that tissue. It does not seem to affect the action of mydriatics or the miotics.

As an ointment it has been employed to best advantage in two, three and five per cent mixtures with neutral vaselin. Excellent results may be obtained with these in all those cases where one would use the yellow oxide, *e. g.*, in palpebral eczema and in the various forms of marginal blepharitis. It is a useful and not very painful agent when employed in massage of the cornea.

OCULAR COMPLICATIONS OF SMALLPOX.

The author[2] had charge of the lazaretto of the Abazia in Venice during the widespread epidemic of 1889–90, when 142 patients out of a total of 1,972 (about 9%) presented various lesions of the ocular structures. Conjunctival affections were the most frequent of all, one-half, or seventy, developing pustular conjunctivitis; three had purulent conjunctivitis; sixteen, phlyctenular conjunctivitis, and three diphtheretic conjunctivitis; twenty-seven had simple corneal ulcer, two serpiginous ulcer; eight, iritis; two, iridochoroiditis; two, iridocyclitis; five, ciliary injection, with photophobia, and four, purulent dacryocystilis. Ten eyes were lost.

[2] Gambarotto. *Complicazioni oculari nel vaiolo*, p. 40.

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THE EMPLOYMENT OF ARGENTAMIN IN EYE DISEASES.

This remedy[3] is a double phosphat of silver and ethylidenediamine, and is made by adding ten parts of argentic phosphat to ninety parts of a ten per cent watery solution of ethylidenediamine $C_2 H_4 (NH_2)_2$.

The solution has an alkalin reaction and does not give a precipitate with solutions of sodic chlorid or albumin, but, like all silver preparations, is decomposed by light, and should accordingly be kept in the dark.

Schaeffer (*Wien. klin. Wochenschrift*, 1894, No. 12) has experimented with this compound from the standpoint of the bacteriologist, and he declares it to be a more potent antiseptic than the nitrat or any other salt of silver. He gives as a reason for this superiority the fact that solutions of argentic nitrat form insoluble compounds with the albumin and sodium chlorid of the tissues and so limit its action to the superficial layers of the mucosæ. Schaeffer applied a silver nitrat and an argentamin solution to two pieces of liver. After the application of the former the surface of the liver was immediately covered by a layer of brown sulphid of silver, while the underlying parts were unaffected. The argentamin, on the other hand, penetrated at once to the deeper layers. Schaeffer proposed this remedy, and has had good results with it in urethral blennorrhea. He uses it in the strength 1:5,000 where the anterior portions of the canal are affected and 1:1,000 in posterior lesions.

Albertazzi and Pardo have confirmed these observations.

Levy claims good results from its use (as lavage) in affections of the stomach.

In the Ophthalmic Clinic at Turin it has been used with the best results in chronic diseases of the lacrymal sac and of the nasal duct. It is used for this purpose, with Anel's syringe, in the proportion of 1:2,000—3,000. Solutions of this strength are not painful, they do not irritate, they do not cause sneezing and their action on the purulent discharges from the duct and sac is very prompt. After a short period of treatment the fluid assumes a mucous quality and becomes thin and transparent.

Argentamin has also been employed in the treatment of acute catarrhal conjunctivitis in the strength of 1:200, such a solution being well borne and its action very rapid and satisfactory.

[3] Bocci (Turin). *L'Argentamina in terapia oculare*, p. 29.

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The first effect of strong applications is to augment, but shortly afterwards to diminish the mucous secretion. The author thinks that, from his experience, argentamin is well worth a trial in ophthalmia neonatorum, although he has not had sufficient experience of it in this disease to report upon it.

STERILIZATION OF THE CONJUNCTIVAL SAC.

The author[4] has made bacteriological examinations of thirty-five eyes operated on after the use of (formol) formalin, 1:1,500, as an antiseptic. He made cultures of the sac contents before and after each irrigation, and compared the results with those following lavage of the eye in exactly the same way, with indifferent (aseptic) solutions. He concludes as follows: (1) When the antiseptic was applied before the operation, after the method of Morax, carrying out at the same time the most scrupulous asepsis, there was a numerical reduction of the colonies in ninety cases—unaffected in twenty-four per cent. (2) Under vigorous asepsis and irrigation with neutral carbonat of sodium and sterilized water the reduction did not reach sixty per cent. (3) With asepsis and antisepsis practiced not only before the operation but on several previous occasions, and particularly with the use of compresses the reduction is in ninety-eight—unaffected in twelve per cent. He lays special stress upon the technique of the examination and points out the advantages that follow the use of a liquid culture medium. He employs bouillon mixed with gelatin, places the patient in a horizontal position and applies the blepharostat. In this way there is complete contact of the culture fluid with the whole conjunctiva, and the test can be made before and after each lavage with the same amount of liquid.

Finally, in opposition to the view of Stroheim, Bach and Morax, irrigation with a physiological solution of common salt, which acts mechanically, does not produce the effects of an accurate antisepsis combined with a thorough asepsis.

These antiseptic precautions should be taken not only immediately before the operation, but for several days preceding it. A wet compress applied twelve hours before operation renders signal service on account of its action upon the skin, the cilia and the free borders of the lids.

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[4] Bardelli. *Sulla sterilizzazione del sacco congiunctivale*, p. 13.

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Absolute sterilization of the conjunctival sac we can not have, but in the great majority of cases the operator is secure from danger of infection since the conjunctival sac rarely contains pathogenic germs.

ON THE PHYSIOLOGICAL ACTION OF ARECOLIN, A NEW MIOTIC ALKALOID.

Lavagna,[5] while investigating the physiological effects of the salts of arecolin, found them to possess very energetic, though temporary, miotic qualities. One drop of a one per cent solution produced in five minutes a well-marked contraction of the pupil which lasted seventy minutes. This was accompanied by a spasm of the ciliary muscle similar to that set up by eserin. It also lowered the tension of glaucomatous eyes treated by it. Lavagna recommends its employment in all cases where a thorough, but temporary miosis is desired.

ICHTHYOL IN CERTAIN FORMS OF OCULAR DISEASE.

Luciani[6] speaks enthusiastically of the ammoniacal salt—the diammonic-ichthyol sulphonat—in the strength of a one per cent to ten per cent solution in sterilized water and as an ointment in the proportion of two and one-half to ten per cent with purified vaselin. He has used it in the following eighty-five cases: marginal blepharitis, thirty-two; phlyctenular conjunctivitis, ten; conjunctivitis with lymphatic keratitis, thirty; simple conjunctivitis, seven; chronic catarrhal conjunctivitis with pannus, two; chronic conjunctivitis with ectropium, two; infective kerato-iritis with hypopyrn, one; recurrent episcleritis, one.

In all the cases of blepharitis, some of them very severe and of long standing, he practiced epilation and the removal of the crusts at the base of the cilia, carefully washed the edges of the lids with cotton soaked in a strong solution of ichthyol and disinfected the conjunctiva and conjunctival sac with the same collyrium; finally he applied to the palpebral margins the ointment, which varied in strength according to the requirements of

[5] Lavagna. *Azione fisiologica dell 'Arecolina, nuovo alcaloide miotizzante*, p. 36.

[6] Paolo Luciani (Spezzia). L'ittiolo in alcune forme di malattie oculari. *Annali di Ottalmologia*, Anno XXIV, fasc 5, p. 501.

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the case. This was repeated every evening, but substituting, as the patient improved, plain boiled water for the ichthyol solution. The results were very satisfactory in every instance. In a short time the superficial ulcerations cicatrized; the eyelashes appeared more healthy and the epidermis once more grew on the lid margins.

In two cases of ectropium of the lower lid, complicated with chronic conjunctivitis and ulcerative blepharitis, this treatment not only cured the disease but sensibly reduced the malposition of the lid.

The cases of chronic catarrhal conjunctivitis with pannus occurred in two old persons who for many years had suffered from the disease, vision being much reduced as the result of corneal opacities. These were treated by repeated irrigations with ichthyrol solution followed by daily massage of the globe with the stronger ointment. The secretions soon became normal, the conjunctival hypertrophy was lessened and the general congestion disappeared. In one patient the improvement was so great that he was able to resume his former occupation.

In the other instances, especially in those patients of a lymphatic habit, the author also obtained extremely good results. He considers ichthyol, in view of its solubility in water and the intimate mixtures it makes with vaselin and other excipients, to be one of the most valuable therapeutic agents which the oculist possesses. He thinks the eye tolerates this remedy in such relatively large doses because of its analgesic action, and that it will prove to be as useful to the ophthalmologist as it now is to the dermatologist and gynecologist.

RIPENING OF IMMATURE CATARACT BY THE DIRECT METHOD.

This writer[7] claims that in the year 1884, while in charge of the ophthalmic department of the Italian Hospital in Buenos Ayres (when Förster's method for the ripening of immature cataract was under consideration) the idea of direct massage of the crystallin first occurred to him.

[7] Massimo Rinaldi (Buenos Ayres). Maturazione della cataratta per mezzo del massagio praticato dirrettamente sulla cristalloide. *Annali di Ottalmologia*, 1895, p. 479.

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Before attempting it upon the human subject he made the experiment upon rabbits, and the results were so satisfactory that he operated upon a patient on December 11, 1894. This case was one of bilateral immature nuclear cataract. The man was able to find his way about alone and could distinguish large objects. The operation was performed on the right eye and was a marked success; in twenty-four hours the cataract was completely opaque. On January 1, 1895, he extracted the cataract, and two weeks subsequently he proceeded to massage the remaining cataract which was also removed in about twenty days. Thus, inside of two months the patient was able to leave the hospital and return to his ordinary occupation.

Dr. Sasso, at that time assistant in the ophthalmic department and now chief surgeon to the hospital, published the history of this case in his thesis (*maduracion artificial de la catarata—masage del cristallino sobre la cristaloide. Nuovo procedimiento.* Buenos Ayres, 1887).

Of the last seventeen cases of direct massage performed between 1893 and 1895 the author has not had a single failure, and the procedure was not followed or accompanied by any untoward accident. He has operated altogether in ninety-three instances, seven of which are recorded by Sasso in his Inaugural Thesis.

To still further emphasize the freedom from danger which the author claims for his method he gives the history of two recent cases of complicated cataract where danger might reasonably be expected from attempts to triturate the anterior capsule.

The first patient had an immature nuclear cataract in the right eye with several posterior synechiæ, the result of an old iritis. The left eye showed incipient cataract without adhesions. He did the usual massage in the right eye, directing the spatula between the synechiæ, at the same time breaking down such adhesions as interfered with a free use of the instrument. At the end of four days the lens was entirely opaque and there was not the least peri-corneal injection.

The second case, in a boy, 7 years of age, was one of trauma, a penetrating wound of the ball from the prong of a common table fork. There was a circumscribed cataract with adhesions of the iris to the capsule. The patient was chloroformed and the lens massaged forty-two days after the accident. Twenty days subsequently the lens was extracted entire and with good results.

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These two cases are given as an answer to criticisms of this procedure made especially by Parisotti in Rome, and Armaignac, of Bordeaux.

Sasso mentions a slight ciliary injection following two of the earlier cases when direct maturation was employed, but the writer contends that this was not the result of the operation alone, and the subsequent extractions were in both instances successful.

Armaignac (*Révue Clinique d'Oculistique*, 1887,) has spoken of this massage as dangerous and said he preferred to it the operation on unripe cataracts, afterwards trusting to irrigation of the anterior chamber for the removal of the soft matter.

Parisotti (*Riforma Medica*, January 11, 1889,) has given as his reasons for declining to do the direct operation the possibility of luxation of the lens and the danger of injuring the iris from uncertain movements of the spatula or of the patient's eye. The author objects to *a priori* conclusions and arguments, and thinks that the experience of an operator who has had always good results must outweigh those of one who has seldom or never done the operation.

Rinaldi gives a historical review of operations for the ripening of immature cataract, and concludes by describing in detail his own method which he commonly practices without previous or subsequent iridectomy. The eye being disinfected with bichlorid solution and the instruments with formol, the eye is anesthized by means of tropa-cocain and nitro-glycerin, a mixture that does not produce mydriasis, dilatation of the pupil not being desirable. The globe is fixed with the usual forceps held in the left hand, a keratome is entered in the median line 2 *mm.* from the sclero-corneal junction and an opening 3 *mm.* wide is made. A spatula of tortoise shell is held like a pen, as horizontal as possible in the right hand. The blade of the spatula should be flexible so that it may be adapted to the curve of the lens. It should be entered carefully, and delicate but firm movements made from left to right and *vice versa* for several minutes. After removal of the instrument the eye should a second time be irrigated with boric acid solution. A bandage is applied for three or four days. The cataract should not be extracted earlier than twenty days after the massage.

[Rinaldi should, as a matter of justice, have referred to the work of Dr. Boerne Bettman, of Chicago, who published an

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account in 1887 of a similar procedure. Indeed, it is a question whether Bettman's publication does not antedate that of Sasso. C. A. W.]

CORNEAL TRANSPLANTATION.

The writer[8] has operated altogether in thirty cases. These included (1) two instances of parenchymatous keratitis where the resulting opacity was so marked that vision was practically nil. In one of these three, and in the other eight years had elapsed since the inflammatory attack had subsided; (2) cases of leucoma adherens where there was no chance of doing an effective optical iridectomy; (3) total staphylomata not amenable to operation; (4) certain cases of partial staphylomata, generally the result of the healing of scrofulous ulcers, which showed as bulging, rather thin, transparent scars to which the iris is attached. These are, especially, the cases in which keratoplastic operations are said to be followed by increased tension, fistula of the cornea, infection, etc.

In fourteen instances rabbit's corneæ were used for the transplantation, in eleven enucleated human eyes, and in a few instances dog's eyes and the corneæ of recently dead-born children. Of the thirty cases eleven did not heal, but non-success did not appear to be the fault of the material used; indeed, failure in each instance could invariably be traced to mechanical causes. The writer believes that the adult human cornea forms the best transplantation material, and recommends the employment of the thin rabbit's cornea only in children or where nothing better is to be had.

The diameter of the graft varied from 3 to 7 *mm.*, the best results being obtained from those measuring 4 to 5 *mm.* Very small ones soon become cloudy while the large ones, in spite of sutures and conjunctival flaps, easily got out of place. The greatest care should be taken in those cases where there is an adherent iris, that it should be snipped off level with the edges of the corneal wound.

The result in almost all cases was that after a few days the graft became cloudy at its margin, the opacity spreading to the

[8] Prof. Ernst Fuchs. Ueber Keratoplastik. Vorgetragen in den 27ten Section der Versammlung deutscher Naturforscher und Aertze. Review in Hirschberg's *Centralblatt für pkt. Augenheilkunde*, November, 1895, S. 340.

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center until the whole piece became whitish. New vessels also formed in the flap to complete the opacity. Now and then the transplanted portion cleared up after a time, but this was uncommon. The opacity nearly always showed itself after the third day; in six cases not until the tenth day, while in one case the flap remained quite clear until the fifteenth day. The newly-formed vessels did not usually appear until several days or weeks after the cloudiness was observed in the graft, and then it proceeded exactly as in the vascularity of parenchymatous keratitis. Finally these new channels partially or entirely disappeared, the graft became more transparent and the line of demarcation between the true and the transplanted cornea was represented by a sharply defined and very white border.

Fuchs, in opposition to von Hippel, does not refer the clouding of the graft to the imbibition of aqueous, but thinks it is one of the results of the healing process that must necessarily follow the attachment of the flap to the edges of the corneal wound. A transparent graft is an ununited graft. Organic union begins with cell proliferation at the margin of the corneal wound followed by cellular excursions and vascular extensions from the former into the substance of the flap. In spite of Wagenmann's experiments on rabbit's eyes, fair results can follow this operation only when the cell multiplication and the vascular projections do not reach the center of the graft, or where there is a late subsidence of both these processes and a consequent clearing up of the cloudy cornea.

As to definite visual results it may be said that not a single graft remained clear. The two cases of parenchymatous keratitis that were under observation for nearly two years exhibited the most satisfactory vision. One of these had V = fingers at 1 — 1¼ *m*. The second had, when discharged, V = fingers at 1¼ *m*., and could do coarse work until the eye became almost blind from an acute attack of some kind accompanied by headache.

Of twelve cases of transplantation done in thick but flat scar tissue, only two remained somewhat transparent. One of these patients is able, a year and a half after operation, to go about the streets alone; the other was able to count fingers when leaving the hospital at 15 *cm*.

In eight cases of total staphyloma one graft alone continued to be transparent for a month, when, under an increase of ocular

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tension it became completely opaque. In another case the transplanted portion became cloudy, but the cornea did not again bulge. In all the other instances the bulging became as marked as before the operation. In five of the eight cases, although the grafts became opaque, they "took" nicely and resisted well the intra-ocular pressure.

To sum up, the results, so far as the attempt to restore the damaged cornea and obtain improved vision is concerned, were not encouraging. In a few cases there was a decided improvement, but in the great majority of instances failure. In partial staphyloma this procedure would seem to offer (in addition to the possibility of better vision) more chances of checking the progress of the disease than any other method such as excision, cauterization, iridectomy, etc. Enough has been gained to encourage us to cultivate the method and to publish the results.

TREATMENT OF SIMPLE CHRONIC GLAUCOMA.

Acute glaucoma, accompanied by inflammatory signs and symptoms, is successfully treated by iridectomy. It is, however, entirely different, says Abadie,[9] with the simple chronic form whose progress is slow but progressive, and where the increased intra-ocular tension does not give rise to such marked symptoms. Gradual contraction of the visual field and loss of vision to blindness are the only functional signs of this disease.

Until within late years it was incurable. None of the methods found to be of value in the acute variety—iridectomy, scleratomy, etc., gave more than temporary relief. In the end the tension increased and blindness finally supervened. To-day, however, we possess the means of curing this serious disease which is far from being rare among persons of a certain age. This curative agent is eserin or pilocarpin, used as a collyrium, regularly and systematically, in the strength of one per cent, one-half per cent or one-quarter per cent, according to the tolerance of the individual.

It was not until 1877 that Laquer, of Strasbourg, discovered this anti-glaucomatous action of eserin. Previous to that time it had been employed to quiet acute attacks of the disease, but

[9] Ch. Abadie. Traitement du glaucome chronique simple. *Archives d'Ophtalmologie*, November, 1895, p. 663.

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the value of its steady and long-continued employment in the chronic form of glaucoma was not realized until then. Cohn, and more recently, Rochon-Duvigneaud have reported cases where marked success followed its use in this manner.

The writer recommends, in addition to the long-continued installation of eserin or eserin plus pilocarpin solutions, the exhibition internally of potassic bromid combined with quinin sulphat. For a month he gives a daily dose of 1 to 2 grammes of the former drug, and every other day a cachêt containing from 30 to 50 *ctgr.* of quinin. The miotic collyrium is instilled once a day. At the end of a month medication is suspended for four out of eight days, provided the tension continues to be normal, and this is to be continued indefinitely if required.

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ABSTRACTS FROM AMERICAN AND ENGLISH OPHTHALMIC JOURNALS.

By Charles H. May, M. D.,
of New York.

THE INFILTRATION METHOD OF ANESTHESIA IN OPHTHALMIC PRACTICE.

H. V. Würdemann, M. D., Milwaukee, Wis., (*Journal of Am. Med. Ass'n*, November 16, 1895). The writer substantiates the statements made in a previous communication of conclusions obtained (*Journal of Am. Med. Ass'n*, December 29, 1894) by following out the line of experiments instituted by Schleich, of Berlin. These experiments referred to the anesthetic properties of water and its application in surgery. Schleich found that a *0.2 per cent solution of sodium chlorid*, used *cold*, injected *into (not beneath)* the skin, rendered operation painless.

"The anesthetic drugs, cocain, carbolic acid and morphin, have a special characteristic, *i. e.*, their addition in very small quantities to the 0.2 per cent salt solution prevented the paresthesia incident to injection of simple salin solution, and the infiltration of inflamed or hyperesthetic areas could be made without pain. The following formulas are advocated by Schleich:

℞

Cocain mur	.20
Morph. mur	.025
Sod. chlor	.20
Aq. dist	ad 100

M. Sterilisat. adde sol. ac. carbol. 5 per cent gtt ij.
S. Solution No. 1, strong. For operation upon highly inflamed or hyperesthetic areas.

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℞

Cocain mur.	.10
Morph. mur.	.025
Sod. chlor.	.20
Aq. dist.	ad 100

M. Sterilisat. adde ac. carbol. 5 per cent gtt ij.
S. Solution No. 2, medium. For most operations.

℞

Cocain mur.	.01
Morph. mur.	.005
Sod. chlor.	.20
Aq. dist.	ad 100

M. Sterilisat. adde sol. ac. carbol. 5 per cent gtt ij.
S. Solution No. 3, weak. For superficial operations upon nearly normal tissues.

"The 'keeping' qualities of these solutions are improved by the addition of a few drops (gtt iij) of a 5 per cent solution of trikresol, as recommended by Parke, Davis & Co.

"At my request, Parke, Davis & Co., of Detroit, Mich., have prepared tablets, triturates and compressed tablets, from which these solutions may be extemporaneously made by dissolving one tablet in 100 cubic centimeters (℥ iij) of distilled or boiled water. These will be found convenient in practice.

"All are to be kept strictly sterile; glass stoppers or scorched cotton, such as are used in bacteriologic experiments, for the bottles; small quantities to be poured out into smaller vessels for each operation. Just before operation the solution should be cooled by laying the bottle containing it on ice. The common form of hyperdermatic syringe, with the finest of needles, is all that is usually needed. * * * The discovery of these truths, so valuable for the question of local anesthesia, is due simply to a slight change of method, the application of the solution within and not under the skin. The anesthesia is caused by the replacement of the normal fluids of the tissues by a fluid of less specific gravity (the water) which causes anemia, compression and cooling, producing thereby a temporary paralysis of the nerve filaments. The pain of the infiltration of the indifferent solutions is abolished by the minute doses of narcotic drugs.

"It is, perhaps, well here to go into the technique of the production of local anesthesia by this method. The field of operation is made aseptic in the usual manner. Having the

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required formula, the solution aseptic and cold, we fill the sterilized hyperdermic syringe; pinching the skin slightly between the skin and forefinger of the left hand, the needle is passed obliquely under the epidermis to the papillæ, intra-cutaneously, until the lumen is fully inserted. A few drops are then injected, thereby producing a white, elevated wheal, the infiltration extending throughout the whole thickness of the skin. There is immediate and complete anesthesia throughout the extent of the infiltration, which lasts from ten to twenty minutes, according to the density of the tissue so edematized. The needle is then reinserted at the periphery of the wheal and the area infiltrated to the reqired extent and depth. No tissue offers any deviation from the dictum; every structure is made anesthetic that can be artificially edematized; this holds good for skin, mucous and synovial membrane, periosteum, fascia, muscle, lymph-glands, nerves, viscera and even bone. * * * For obvious reasons this method is applicable only to operations in our practice upon the eyelids, etc. The resultant edema would interfere with most operations within the orbit, such as enucleation.

"However, I bring the subject to workers in ophthalmic surgery, believing it will be an advantage to the ophthalmic surgeon for most operations in which instillation of cocain is inapplicable, but which may be deemed too trivial for a general anesthetic and yet are attended with considerable pain. In my practice it is in daily use for chalazia, tarsal tumors, opening of abscesses and plastic operations. For most office operations the Schleich method is an invaluable contribution to our therapeutics. It should do away with the injection of dangerous solutions of cocain, and take the place of general anesthesia for many operations."

PROGNOSTIC SIGNIFICANCE OF ALBUMINURIC RETINITIS.

E. Oliver Belt, M. D., Washington, D. C., (*Journal of Am. Med. Ass'n.*, November 2, 1895). The writer collected the records of 419 cases of albuminuric retinitis from ophthalmologists throughout the country. "The time allowed was too short for many to look over their records, and many had not kept trace of the patients after referring them back to the family physician, but enough cases were reported to show that the

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duration of life is longer among private patients, and that renal affection is immediately influenced by hygienic surroundings. However, the number of cases surviving two years was disappointingly low, and the concensus of opinion seems to be that nearly all prove fatal in less than two years.

"From all the statistics I have been able to find we get the following results: Cases in private practice, 155; of these 62% died within one year, 85% in two years and 14% lived more than two years.

"Hospital cases, 77; of these 85% died within one year, 93% in two years and 6% lived more than two years.

"Mixed cases, 187; of these 65% died within one year, 93% within two years and 6% lived more than two years.

"Total number of cases, 419; of these 72% died within one year, 90% within two years and 9% lived more than two years."

THE STATISTICS OF TRACHOMA.

Dr. E. VanMillingen, Constantinople (*Annales d' Oculistique*, English edition, September, 1895). The writer was charged "with the task of gathering documents relative to forming a statistical table of trachoma." The disease is met with everywhere—"as well in polar circles as in temperate and equatorial zones." He gives a table showing the relation existing between the frequency of trachoma and the social and intellectual conditions of various peoples, and also the frequency in relation to the population in different countries. He finds that the number of trachomatous persons is in proportion to the number of illiterate. "The high proportion of trachoma in Galicia, Holland and Roumania should be attributed to the great number of Jews, among whom this disease has always been very extensive, not from any racial predisposition, but rather on account of their lack of hygiene and cleanliness, and on account of their more or less Asiatic habits. Jews of the well-to-do class suffer no more from trachoma than the well-to-do classes of other nationalities.

"Two factors are indispensable to the propagation of trachoma: (1) *Contagion;* (2) *defective hygiene.* Contagion alone is not sufficient to produce an extensive epidemic of the disease; it must be seconded by bad hygiene, uncleanliness, crowded living and a sedentary life. Continual change of place

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and air kills epidemics of trachoma. Uncleanliness and crowded living seem to increase its virulence." He gives the letters received from all parts of the world in reply to his inquiries on the subject; from the United States there are two, one from Knapp, New York, and the other from Howe, Buffalo, N. Y. Dr. Knapp writes as follows:

"1. Trachoma is very common in New York.

"2. It is principally the poor class which is affected; the majority are Jewish immigrants from Poland and Russia.

"3. The acute form is rare, season has no influence on it.

"4. In my opinion trachoma may be (*a*) non-contagious: *Trachoma simplex*, infiltration of hygiene granules which may be thickly disseminated through all four lids of an individual without the slightest inflammatory symptoms. Radical expression, best performed by the aid of the forceps with cylindrical rollers, cures these cases without the use of collyrium or crystals of sulphat of copper, etc.; or (*b*) contagious: *Trachoma complicatum sive consecutioum* arising from catarrhal or blenorrhoic conjunctivitis. The cure of this form requires the use of chemical agents after mechanical treatment. This form is much more rebellious and produces more cicatrices than the simple form.

"5. Sex has no influence on it.

"6. Negroes are only exceptionally affected."

Dr. VanMilligen's conclusions are as follows:

"1. Trachoma is an infectious and contagious disease which predominates in uncivilized countries and tends to disappear with the progress of civilization and of hygiene. Hygiene and cleanliness are the best preservatives against trachoma.

"2. Trachoma is not influenced by altitude, it may spread wherever the people are uncleanly and live in poverty, quite as easily at altitudes from 1,000 to 5,000 meters as on plains.

"3. All races are equally susceptible to the virus of trachoma. An immunity for certain races does not exist."

LIGHT—THE OINTMENT OF THE YELLOW OXID OF MERCURY AND THE OINTMENT-POTS IN COMMON USE.

Dr. S. Holth, Norway (*Archiv. of Ophthal.*, October, 1895). The writer calls attention to the fact that the ointment of the yellow oxid of mercury decomposes very readily. "A change

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takes place after a short period, sometimes at the end of a few days; as a result, there is a grayish discoloration which, becoming darker finally changes to black. Altered in this manner, the ointment not only suffers in appearance, but though possibly harmless, it is less potent, and it may even be entirely useless. If its use be limited to a few days, or if it be freshly prepared every day for use in clinics, there will be practically no decomposition; but, as ordinarily prescribed to be applied at home, for a considerable period of time, this change is an objectionable feature."

The writer conducted a series of experiments for the purpose of ascertaining the cause of this decomposition. His results agree with the statements found in text-books of chemistry: That the red and yellow oxids of mercury are reduced through the influence of light. They justify the following conclusions:

1. Decomposition of the ointment of the yellow oxid of mercury which shows itself in grayish discoloration is not due to chemical changes produced in the ointment-base, but is "dependent entirely upon the reducing effect of light passing through the more or less transparent walls of the ointment-pots in ordinary use;" violet light probably exerts the most effect in this direction.

2. This decomposition is not influenced by temperatures between 0° and 30° C.

3. It is not caused by access of air.

4. Any ointment-pot may be used if kept in a dark place.

5. The use of absolutely opaque pots, provided with similar covers, is the most practical way of avoiding decomposition.

FORMALIN AS A PRESERVATIVE AGENT FOR EYE SPECIMENS.

William H. Wilder, M. D., Chicago, Illinois (*Journal of Am. Med. Ass'n.*, November 9, 1895). After pointing out that the use of some of the older hardening and preservative agents is accompanied by certain disadvantages for eye specimens, the writer speaks of formalin as one of the most valuable preservative agents which we possess. "Formal or formalin is an aqueous solution of formaldehyd; the latter in its original state being a gas resulting from the oxidation of methyl-alcohol. As obtained in the market, this solution is a colorless neutral

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liquid with a specific gravity of 1080 to 1088, having a pungent penetrating odor and containing forty per cent of formaldehyd. It is miscible in all proportions with water so that solutions of different strengths can be readily made. The specimens exhibited here were hardened in a five per cent solution made by using one part of formalin (Schering) and eight parts of water. This strength has seemed to me the most useful, although a weaker solution may be used also with success.

The method of procedure is, in brief, as follows: After washing the blood from the enucleated eye with ordinary water, it is placed at once in a bottle containing two or three ounces of the five per cent solution where it remains for a few days. It will then be found hard enough to bisect. In case the eyeball is filled with a tumor or a mass of exudate it can be cut with a thin razor almost as easily as one would cut an apple, but if the vitreous is present, either in the normal or fluid condition, it is best to freeze it so that in cutting the relation of the delicate internal structures may not be disturbed and the lens dislocated. The part that is to be preserved entire, after thawing in tepid water if it has been previously frozen, is then placed twenty-four hours in a thirty-three and one-third per cent solution of glycerin and water, and then for an equal length of time in a fifty per cent glycerin-water solution. It is then ready for mounting in glycerin jelly after the method of Priestley Smith described in the *Ophthalmic Review*, 1884."

ACUTE COCAIN POISONING.

M. V. Ball, M. D., Philadelphia, Pa., (*Maryland Med. Journal*, November 16, 1895, and *Med. and Surg. Reporter*, November 16, 1895. The writer reports a case of cocain poisoning, with recovery; 18 grains of the alkaloid had been taken; morphin and strychnin were used. "The literature on cocain intoxication, though widely scattered, is, however, quite extensive. Mattison, of Brooklyn, and Germain See, of Paris, have each reported, in 1892, two hundred and more cases of poisoning, with twenty deaths. Since then quite a number of deaths have been recorded in the medical journals. The dose at which fatal poisoning has occurred varied within marked limits. In five fatal cases reported by Manheim, the quantity of the alkaloid

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taken was over 15 grains. In two cases reported by Mattison, death occurred after the hypodermic injection of two-thirds of a grain. Symptoms of poisoning have set in when the drug was administered by the stomach, when thrown into the urethra, nose, ear, rectum, or when injected under skin or into the gum; or when simply rubbed over the surface of the face. Absorption is very rapid, and in some of the cases reported the operator barely had time to withdraw the needle of his syringe before symptoms of intoxication set in. The symptoms described in each case differ greatly, and there are all stages, from slight incoherency in speech, with dizziness and dilated pupils, to excited hallucinatory delirium, thready, uncountable pulse, convulsive breathing, or sudden collapse, or marked tetanic spasms. Cocain poisoning exhibits the symptoms of strychnin poisoning in some cases, in others that of alcohol, and in some a mixture of both."

A NEW OPERATION FOR CONGENITAL PTOSIS, WITH REPORT OF TWO CASES.

T. C. Evans, M. D., Louisville, Ky., (*New York Medical Journal*, December 21, 1895). Dr. Evans reports four operations, on two cases of congenital ptosis, performed by a modification of Mules' method, and gives copies of photographs, which indicate excellent results. "With the patient anesthetized, I made an incision three-eighths of an inch long in the free margin of the lid and about one-sixteenth of an inch in depth, the site of the incision being midway between the outer and inner canthus. I then made a second incision three-fourths of an inch in length above the brow, extending through the integument and occipito-frontalis muscle (the most prominent part of the occipito-frontalis having been determined and marked prior to the anesthesia). Then, taking a flat nedle with a long, flexible shank with the eye very near the point, carrying about six inches of No. 30 silver wire, I passed it into the lid at the inner extremity of the marginal incision, passing upward between the orbicularis muscle and the tarsus, under the brow, coming out at the inner extremity of the incision above the brow. The needle was withdrawn, leaving the wire in position, the other end of the wire was passed through the eye of the needle and carried into the outer extremity of the marginal incision and

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brought out at the outer extremity of the superior incision, and the needle withdrawn as in the first instance. The loop of wire was drawn into the marginal incision and the wound closed with four or five firm sutures. The ends of the wire were then passed through a perforated shot and traction made until the desired elevation of the lid was secured. The shot was then pressed with pliers and the excess of wire clipped off, leaving a quarter of an inch on each side of the shot. The incision was closed with silk sutures. Afterward the superior incisions were dressed with iodoform gauze; the marginal incisions were left without dressing,. Both eyes of each patient were operated upon under one anesthesia. The sutures were removed from both superior and marginal incisions forty-eight hours after operation. The results in the four operations have all been successful far beyond my expectations."

Contrasting his operation with the original one of Mules (*Lancet*, May 11, 1895; report in these ANNALS, July, 1895), he says:

"The points of superiority of the operation as devised by me are that the incisions make it possible to bury the wire from the start without waiting for it to 'sink below the skin' of its own accord. With the incisions, the recovery from the operation is practically complete in forty-eight hours. The introduction of the needle at the lid margin instead of above the brow removes the possible danger of passing through the lid and puncturing the sclera, and secures a better position for the suture. With the perforated shot the degree of elevation of the lid is quickly, easily and accurately controlled, without endangering the integrity of the wire by twisting. Then, if at any time after the operation it is desirable to modify its effects, it is only necessary to cut down upon the shot, which can readily be felt beneath the skin, and diminish or increase the effect by altering the length of the wire loop.

"In all four operations I used a No. 1 shot, and had the perforations made barely large enough to admit the two wires. As to the permanency of their result, the only thing that could unfavorably influence it would be the migration of the suture. The size and shape of this, together with the imbedding of the shot, makes this so remote a probability as to practically eliminate it from consideration."

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TREATMENT OF PURULENT OPHTHALMIA BY EXTENSIVE IRRIGATION WITH PERMANGANATE OF POTASH.

Dr. Kalt, Paris, (Report of the Ophthalmological Society of Heidelberg, August, 1895, *Annales d'Oculistique*, English edition, September, 1895. "Treatment with extensive irrigations, such as were introduced in the isolated ward of the Quinze-Vingts in 1894, has been used since then in the treatment of all cases of ophthalmia and purulent catarrh by my colleagues, Drs. Trousseau and Chevallereau. In examining my personal statistics, I find that 105 cases of ophthalmia of the new-born, thirteen cases of blenorrheic ophthalmia of adults and forty-eight cases of purulent conjunctivitis in children and adults, in all 156 cases, have been treated in this way. The purulence has always been modified with great rapidity; in fact, about the fifth or sixth day the purulent effusion was very slight. Ophthalmia in children is generally cured in twelve to fifteen days.

"The irrigations should be made three time a day for the first two days, and then twice a day, passing through each eye one and one-half to two liters of warm solution (25° C.) of a 1:3,000 solution of permanganate (a teaspoonful of the saturated solution to one liter of water). I have only rarely seen superficial ulcerations in the course of treatment. If there are already deep ulcerations, irrigations should be carried on without fear. The funnel which I employ is made of glass, in three sizes. Pressure should not exceed 40 *cm.*

"If there are gray false membranes (streptococci) it is well to add to the 1:3,000 solution of permanganate 1:10,000 of of sublimat, that is, 10 *c. c.* per liter of a one per cent solution of sublimat. The fluid should be slightly warmed, that is, its temperature should be about 25° C. Nothing prevents the concurrent use of cauterizations with 1:50 of nitrat of silver, but I think they are useless."

SLIGHT EFFECTS OF TENOTOMIES OF THE OCULAR MUSCLES, AND WHAT ARE THE INDICATIONS AND ADVANTAGES OF TENDON CONTRACTIONS?

George T. Stevens, M. D., New York (*Journal of Am. Med. Ass'n.*, November 19, 1895). The writer discusses the following questions:

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1. Why are slight effects produced as the result of free tenotomies of the ocular muscles?

2. What are the indications and advantages for muscle shortening?

He sums up an answer to these questions in the following words: "Free tenotomies have slight apparent effect when the muscle operated on is not the muscle at fault, and tendon contractions are advantageous only when they are directed against a condition of muscles positively shown to be loose, not by the failure of the eye to rotate in a single direction, but by a marked excess in the sum of rotations in opposite directions."

To draw a useful lesson from these few suggestions I would say that a case of strabismus convergens or divergens is to be studied from the standpoint of the tensions of all the eye muscles, and that a very large proportion of these, and especially those of high degree, are the manifestations principally of vertical tensions.

If the rotation upward of the eyes, as shown by the tropometer, is materially less than 40° or 45°, while the downward rotation materially exceeds 50° or 55°; no correction for the lateral deviation should be made until the rotation upward equals 40° and hyperphoria is absent. Or, if the upward rotation is excessive in comparison to the downward, an analogous correction is first to be made before an internal or an external rectus is cut.

If the rotations in all directions are evidently too great, indicating an absence of proper muscular tension, tendon shortening may be resorted to which will be very rarely. If the sum of the rotations is not excessive, tenotomies only are called for.

PRACTICAL POINTS GAINED IN THE TREATMENT OF ONE THOUSAND CASES OF INSUFFICIENCIES OF THE OCULAR MUSCLES.

J. Walter Parks, M. D., Harrisburg, Pa., (*Journal of Am. Med. Ass'n.*, November 9, 1895). The writer's conclusions agree, in the main, with the view held by practically all conservative ophthalmologists; they are the following:

"1. That following up one's cases for one to two years is necessary, and should be done in all muscular insufficiencies to tabulate results for publication.

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"2. Those cases involving the recti muscles occurring in hyperopia and compound hyperopic astigmatism of from 5° to 15° combined with errors of refraction will generally all do well with their refractive errors corrected; muscular exercises, outdoor life, tonic treatment and the temporary use of prisms.

"3. Those occurring in myopia and compound myopia astigmatism require the use of prisms more constantly and are not benefitted quite as much by muscle exercising as those occurring in hyperopia, etc. Tenotomies with advancements are generally more effective than in hyperopic cases.

"4. Those occurring in constitutional, paralytic and reflex cases require plenty of rest, outdoor exercising, the temporary use of prisms, electricity and general tonic treatment.

"5. Tenotomies are not necessary in most cases and should not be done until all other remedies fail.

"6. That there are some cases of esophoria of slight degree of deviation that require nothing but rest and outdoor exercise to effect a cure."

DIPLOPIA IN THE PERIPHERY OF THE FIELD OF FIXATION AND ITS BEARING ON THE DIAGNOSIS OF MUSCULAR PARALYSIS.

Dr. A. Duane, New York (*Archiv. of Ophthal.*, October, 1895). Dr. Duane draws the following conclusions from a large number of examinations of the field of fixation and of diplopia occurring in all parts of the field:

"1. Diplopia occurring at the limits of the field of fixation (beyond forty-five degrees from the primary position) is physiological. It is not, however, by any means, always present even there, and in any case is slight in amount, and in the same case often variable and inconstant. It is solely diplopia of this sort to which Dr. Alling (Diplopia Occurring at the Periphery of the Field of Fixation, by Dr. A. N. Alling, New Haven, Conn., *Archiv. of Ophthal.*, July, 1895), has reference in his article and to which his arguments apply. It may be due to a natural failure of one eye to keep up with the other in its excursions or to the effects of projection, being in the latter case brought about by the rotation of the retinal horizon, real or apparent, that occurs in oblique positions of the gaze. But whether projection can produce any diplopia at all of the kind that I found

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in my cases is doubtful, and in any case the effect of projection in producing vertical diplopia is very slight and makes itself apparent only at the limits of the fields of fixation.

"2. In a large number, probably the majority, of persons with natural eyes it can be proved that binocular single vision is still present even when the eyes are carried further than forty-five degrees from the primary position.

"3. Well-marked diplopia occurring as a constant phenomenon within forty degrees of the primary position indicates a weakness, or at least a want of balance of the eye-muscles. If this diplopia is still quite peripherally located, *i. e.*, occurs not less than thirty degrees from the primary position it indicates only a slight, and, very likely, temporary muscular disability such as may occur in neurasthenia, etc. As weakness from this cause is very apt to be symmetrical the diplopia is often present to about equal extent in all the oblique positions of the gaze, both to the right and left and above and below.

"4. A diplopia which begins to be apparent near the primary position and increases rapidly as the eyes are carried in any one direction indicates a serious impairment of the muscular energy, *i. e.*, a true paresis. The diagnosis will be confirmed if upon repeated examinations it is found to be constantly present, and particularly, if it shows a markedly unilateral character. Diplopia of this sort Dr. Alling does not consider in his article, and to it, therefore, his arguments do not apply. As eight out of ten of the cases I originally described, (January and April, 1894, *Archiv. of Ophthal.*) and well as some six cases which I have examined since, belong to this category; I must adhere to my original diagnosis and to the opinions based upon it."

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TINNITUS AURIUM AND SOME RESULTS OBTAINED BY ITS TREATMENT WITH CONIIN HYDROBROMAT.

By Vincent Gomez, M. D.,
of New York City.

[*Continued from October Number, 1895.*]

Case I. S. W., a married woman, 25 years of age, first came under the writer's care March 16, 1895. She had been troubled very much for about two years with deafness and a constant tinnitis and at times severe vertigo. Examination reveals the following: Hearing distance, left ear: watch = 2 inches, whisper = 20 feet.

TUNING-FORK REACTION—LEFT EAR.

	C	C^1	C^2	C^3	C^4
Rinné	a. c.	a. c.	a. c.	a. c.	a. c.
	14	12	17	11	10
Schwabach	8	6	9	8	3

Hearing distance, right ear: watch = zero, whisper = 8 inches.

TUNING-FORK REACTION—RIGHT EAR.

	C	C^1	C^2	C^3	C^4
Rinné	b. c.	b. c.	b. c.	b. c.	
	0	2	5	4	0
Schwabach	6	8	6	5	

Weber's test + in right ear.

Otoscopic examination; left ear—The membrana tympani is greatly retracted, moderate opacity, which is well marked posterially; light reflex is dim, small and marginal. Right ear—The membrana tympani is greatly retracted; diffused opacity; light reflex dim and circumscribes the umbo.

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Diagnosis: Otitis interna et media. The patient was given coniin hydrobromat gr. $^1/_{60}$, three times daily.

April 20. She was again seen and says at times the tinnitus does not seem as loud, and does not feel any dizziness.

May 7. Tinnitus somewhat diminished; no vertigo.

May 25. Has been taking coniin gr. $^1/_{60}$, three times daily, faithfully, but the tinnitus is about the same.

June 8. Tinnitus about the same. Discontinued use of medicine.

Case II. C. J., 43 years of age, was seen April 19, 1895. Has noticed that for five or six weeks she is gradually becoming deaf, this being accompanied with a constant tinnitus in both ears. Hearing distance, left ear: watch = 2 inches, whisper = 10 feet.

TUNING-FORK REACTION—LEFT EAR.

	C	C^1	C^2	C^3	C^4
Rinné	b. c.	b. c.	a. c.	a. c.	a. c.
	6	5	12	9	5
Schwabach	6	9	6	5	3

Hearing distance, right ear: watch = contact, whisper = 6 feet.

TUNING-FORK REACTION—RIGHT EAR.

	C	C^1	C^2	C^3	C^4
Rinné	b. c.	b. c.	b. c.	a. c.	a. c.
	6	6	8	5	4
Schwabach	8	9	12	3	2

Weber's test = in both.

Otoscopic examination; left ear—Membrana tympani is greatly retracted and opaque, light reflex dim and small. Right ear—Membrana tympani very greatly retracted and very opaque. The light reflex is a mere central dot.

Treatment: Coniin gr. $^1/_{60}$, three times daily.

April 27. Patient thinks tinnitus is not as loud, and where before it was constant, now it leaves her for a short while and returns, but not as loud.

May 4. Tinnitus stays away for a longer time than formerly; feels a great deal more comfortable; noise is not as loud.

May 15. Tinnitus much better.

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May 25. Tinnitus only present at night.

June 1. About the same.

June 8. The tinnitus has assumed a different character, but is about the same.

June 10. To-day has had no tinnitus. Discontinued coniin.

Case III. M. T., 31 years of age, seen February 16, 1895. Complains of a severe and constant tinnitus in both ears with some impairment of hearing for six weeks.

Hearing distance, left ear: watch = 50 inches, whisper = 25 + feet.

TUNING-FORK REACTION—LEFT EAR.

	C	C^1	C^2	C^3	C^4
Rinné	b. c.	a. c.	a. c.	a. c.	a. c.
	12	18	19	18	8
Schwabach	14	16	8	16	0

Galton's whistle = $2^6/_{10}$.

Hearing distance, right ear: watch = contact, whisper = 20 feet.

TUNING-FORK REACTION—RIGHT EAR.

	C	C^1	C^2	C^3	C^4
Rinné	b. c.	b. c.	b. c.	a. c.	a. c.
	5	8	15	11	7
Schwabach	19	14	16	9	0

Galton's whistle = $2^9/_{10}$. Weber's test + in right ear.

Diagnosis: Otitis interna et media.

Otoscopic examination; left ear—Membrana tympani is moderately retracted, the light reflex is shortened and dulled. Right ear—About the same as the left ear only the changes are not as marked.

Treatment. Coniin gr. $^1/_{60}$, three times daily.

February 23. Tinnitus in the left ear is considerably diminished, feels a great deal better.

March 16. Head feels clearer; tinnitus has diminished steadily; thinks she can hear better.

Hearing distance, right ear: watch = contact, whisper = 25 feet. Hearing distance, left ear: watch = 60 inches, whisper = 35 feet.

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March 30. Has not been taking any medicine for five days, and tinnitus is much worse.

April 20. Tinnitus only present at night.

May 6. Has not been taking any coniin for ten days and thinks tinnitus is decidedly worse.

May 11. She says tinnitus is lessened in amount, and is not as loud.

May 25. Has not taken any coniin for one week and tinnitus is about the same.

June 8. Very slight anount of tinnitus only at night.

Case IV. Patrick Mc., 45 years of age. Has noticed for past eight months a very distressing tinnitus in both ears, worse in the right ear, and it seems louder at night. Has had impaired hearing for about twenty years.

Hearing distance, left ear: watch = light contact, whisper = 4 feet.

TUNING-FORK REACTION—LEFT EAR.

	C	C^1	C^2	C^3	C^4
Rinné	b. c.	a. c.	a. c.	a. c.	a. c.
	7	16	20	14	6
Schwabach	7	8	0	$5\frac{1}{2}$	0

Galton's whistle = 1 — $^8/_{10}$.

Hearing distance, right ear: watch = zero, whisper = 3 feet.

TUNING-FORK REACTION—RIGHT EAR.

	C	C^1	C^2	C^3	C^4
Rinné	a. c.	a. c.	a. c.	a. c.	a. c.
	25	12	22	15	2
Schwabach	8	6	4	2	0

Galton's whistle = 1 — $^8/_{10}$.

Diagnosis: Otitis interna et media.

Treatment: Coniin gr. $^1/_{60}$, three times daily.

May 3. Tinnitus somewhat diminished; head feels clear.

May 10. About the same.

May 17. Noise is about the same, no improvement.

Case V. John C., 56 years of age, was first seen May 1, 1895. Deafness with buzzing tinnitus in both ears for six months which is gradually getting worse.

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Hearing distance, left ear: watch = light pressure, whisper = 12 feet.

TUNING-FORK REACTION—LEFT EAR.

	C^2
Rinné	a. c.
	14
Schwabach	6

Hearing distance, right ear: watch = $^1/_2$ inch, whisper = 12 feet.

TUNING-FORK REACTION—RIGHT EAR.

	C^2
Rinné	a. c.
	16
Schwabach	8

Weber's test + in right ear.

Otoscopic examination; left ear—Membrana tympani is very dull and retracted; no light reflex. Right ear—Much the same as left.

Diagnosis: Otitis media et interna.

Treatment: Coniin gr. $^1/_{60}$, three times daily.

May 15. No improvement.

May 25. Tinnitus about the same; increased dose to gr. $^1/_{40}$.

June 1. No improvement, the character of the tinnitus about the same; discontinued the use of coniin.

Case VI. James Mc., 32 years of age. For the past year buzzing tinnitus with some deafness in left ear.

Hearing distance, left ear: watch = zero, whisper = 5 feet

TUNING-FORK REACTION—LEFT EAR.

	$C-^1$	C	C^1	C^2	C^3	C^4
Rinné	b. c.	b. c.	b. c.	b. c.	b. c.	a. c.
	0	0	0	0	5	6
Schwabach	15	10	7	7	9	4

Galton's whistle = $2 - ^8/_{10}$.

Hearing distance, right ear: watch = 4 inches, whisper = 20 feet.

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TUNING-FORK REACTION—RIGHT EAR.

	C — ^{1}	C	C^1	C^2	C^3	C^4
Rinné.....	b. c.	a. c.	a. c.	a. c.	a. c.	a. c.
	5	21	11	15	17	11
Schwabach..	12	11	6	10	8	0

Galton's whistle = $^5/_{10}$. Weber's test + in left ear.

Otoscopic examination; left ear—Membrana tympani is retracted and dulled; no light reflex. Right ear—Membrana tympani retracted and dulled; light reflex, small and dim.

Diagnosis: Otitis media et interna.

Treatment: Coniin gr. $^1/_{60}$, three times daily.

May 15. Tinnitus about the same.

May 22. No improvement; increased dose to gr. $^1/_{40}$.

May 27. Tinnitus is just as loud and has not diminished. Increased dose to gr. $^1/_{30}$, three times daily.

May 31. No improvement in the tinnitus, but head feels clear. This morning some gastric disturbance. Discontinued the use of coniin.

Case VII. Louis H., 43 years of age, was seen first on March 23, 1895, giving this history: Deafness in right ear ever since he can remember, which of late is getting worse, never had any tinnitus in this ear. In the right ear he has been deaf with constant tinnitus for nine years. He attributes his trouble in the right ear to the following: His little son drove a pin in this while he was sleeping. He cerebrates slowly.

Hearing distance, left ear: watch = contact, whisper = 20 feet.

TUNING-FORK REACTION—LEFT EAR.

	C — ^{1}	C	C^1	C^2	C^3	C^4
Rinné.....	b. c.	b. c.	b. c.	b. c.	b. c.	a. c.
	0	8	9	7	8	6
Schwabach	14	15	13	16	11	0

Galton's whistle = 1 — $^6/_{10}$.

Hearing distance, right ear: Watch = 2 inches, whisper = 18 feet.

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TUNING FORK REACTION—RIGHT EAR.

	C—1	C	C1	C2	C3	C4
Rinné	b. c.	b. c.	b. c.	b. c.	b. c.	a. c
	0	0	0	12	12	7
Schwabach	12	16	12	8	14½	0

Galton's whistle = 1 — $^{4}/_{10}$. Weber's test + in right ear.

Otoscopic examination: left ear—Moderate sized inferior perforation, healed fracture of malleus, cicatrix in membrana flaccida. (Hepburn's case.) Right ear—Dry posterior perforation, and also above over hammer handle, apparent cicatrical condition. Treatment: Coniin gr. $^{1}/_{60}$, three times daily.

April 20. Has been taking coniin for about three weeks, and does not think tinnitus has changed.

April 27. Does not notice any change in the tinnitus. Increased coniin to gr. $^{1}/_{64}$, three times daily.

May 11. Has been taking coniin faithfully, but does not notice any change in the tinnitus.

May 18. No improvement; some nausea and vomiting; no vertigo; discontinued the use of coniin.

Case VIII. Martha M., 16 years of age, was seen for the first time on February 15, 1895, complains of deafness with constant tinnitus in both ears for four years, which seems to become worse.

Hearing distance, left ear: Watch = 12 inches, whisper = 20 feet.

TUNING-FORK REACTION—LEFT EAR.

	C	C1	C2	C3	C4
Rinné	b. c.	b. c.	a. c.	a. c.	a. c.
	10	11	18	9	8
Schwabach	13	14	14	7	4

Hearing distance, right ear: Watch = 12 inches, whisper = 20 feet.

TUNING-FORK REACTION—RIGHT EAR.

	C	C1	C2	C3	C4
Rinné	b. c.	b. c.	b. c.	b. c.	a. c.
	5	7	11	6	3
Schwabach	10	11	14	8	1

Weber's test + in right ear.

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Otoscopic examination: Left ear—Membrana tympani greatly retracted; marked posterior opacity; no light reflex. Right ear—Membrana tympani greatly retracted; well-marked posterior opacity; light reflex, dim and small.

Diagnosis: Otitis media, chronica catarrhalis.

Treatment: Coniin gr. $^1/_{60}$ three times daily.

April 3. Tinnitus somewhat diminished and stays away for longer periods.

April 27. Tinnitus very much diminished.

May 14. Has had no tinnitus for ten days, feels good and says she hears better.

June 8. She has had no tinnitus for over one month.

Case IX. Hannah O., 36 years of age, seen first on May 23, 1895. For four weeks had severe and constant tinnitis in the left ear, which seemed to have a progressive course.

Hearing distance, left ear: Watch = 40 inches, whisper = 30 + feet,

TUNING-FORK REACTION—LEFT EAR.

	C	C^1	C^2	C^3	C^4
Rinné	a. c.	a. c.	a. c.	a. c.	a. c.
	15	11	20	12	8
Schwabach	11	9	8	6	2

Hearing distance, right ear: Watch = 60 inches, whisper = 30 + feet.

TUNING-FORK REACTION—RIGHT EAR.

	C	C^1	C^2	C^3	C^4
Rinné	a. c.	a. c.	a. c.	a. c.	a. c.
	10	15	18	17	8
Schwabach	7	11	7	6	3

Weber's test + in right ear.

Otoscopic examination: Left ear—The membrana tympani presents marked retraction and opacity; light reflex dim, central and broken. Right ear—About normal.

Diagnosis: Otitis media et interna.

Treatment: Coniin hydrobromat gr. $^1/_{60}$, three times daily.

May 31. Tinnitus very much diminished.

June 8. About the same, increased dose of coniin to gr. $^1/_{40}$, three times daily.

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June 10. Tinnitus has not been present since yesterday morning. Patient did not return.

Case X. Mrs. C. W., 25 years of age, consulted me on March 6, 1895, for a very distressing tinnitus in both ears, with dullness of hearing which has troubled her for about five years. She attributes her present trouble to an attack of grip.

Hearing distance, left ear: Watch = 16 inches, whisper = 27 feet.

TUNING-FORK REACTION—LEFT EAR.

	C — ^{1}	C	C^1	C^2	C^3	C^4
Rinné	b. c.	b. c.	b. c.	b. c.	a. c.	a. c.
	5	6	9	14	14	6
Schwabach	10	11	10	15	10	2

Galton's whistle = 1 — $^5/_{10}$.

Hearing distance, right ear: watch = 12 inches, whisper = 25 feet.

TUNING-FORK REACTION—RIGHT EAR.

	C — ^{1}	C	C^1	C^2	C^3	C^4
Rinné	b. c.	b. c.	b. c.	b. c.	a. c.	a. c.
	6	6	5	6	9	4
Schwabach	11	12	11	12	8	0

Galton's whistle = 1 — $^8/_{10}$. Weber's test + in left ear.

Otoscopic examination: Left ear—Moderate retraction of membrana tympani; slight dullness; light reflex broken. Right ear—About the same as left ear.

Diagnosis: Otitis media et interna.

Treatment: Coniin hydrobromat gr. $^1/_{60}$, three times daily.

March 16. Tinnitus has diminished for six days steadily, but contracted a severe cold in the head, and the tinnitus became worse, but not as loud as formerly.

March 23. Tinnitus in the left ear has diminished very much; has had no tinnitus in the right ear for three days.

March 30. About the same.

May 2. Tinnitus is ever so much better.

May 8. Tinnitus has entirely disappeared from right ear; very much diminished in left ear and not as loud. Discontinued the coniin.

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May 12. No tinnitus in the right ear; about the same in the left ear.

June 1. Has not been taking any coniin for nearly one month. Has had, at times, some tinnitus in the right ear; about the same in left ear.

Case XI. Timothy C., 55 years of age, seen first on February 20, 1895, giving this history: Constant tinnitus, with deafness in both ears for about seven years, which is getting much worse since last week.

Hearing distance, left ear: watch = light pressure, whisper = 4 feet.

TUNING-FORK REACTION—LEFT EAR.

	C	C^1	C^2	C^3	C^1
Rinné	a. c.	a. c.	a. c.	a. c.	a. c.
	21	14	26	16	6
Schwabach	9	6	7	0	0

Galton's whistle = 2 — $^5/_{10}$.

Hearing distance, right ear: watch = 3 inches, whisper = 6 feet.

TUNING-FORK REACTION—RIGHT EAR.

	C	C^1	C^2	C^3	C^4
Rinné	a. c.	a. c.	a. c.	a. c.	a. c.
	20	10	25	19	9
Schwabach	10	8	10	4	0

Galton's whistle = 2 — $^9/_{10}$. Weber's test = in both ears.

Otoscopic examination: Left ear—Membrana tympani somewhat retracted; light reflex irregular. Right ear—The same as left ear.

Diagnosis: Otitis interna.

Treatment: Coniin hydrobromat gr. $^1/_{60}$, three times daily.

April 20. Has been taking coniin regularly for one month, but does not notice any improvement. Increased coniin to gr. $^1/_{40}$, three times daily.

April 27. No improvement. Increased to gr. $^1/_{30}$, three times daily.

May 3. No improvement. Increased dose to gr. $^1/_{30}$, four times daily.

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May 5. Some gastric disturbance; no improvement. Discontinued use of coniin.

Case XII. Annie C., 60 years of age, was first seen on February 16, 1895. She complained of constant tinnitis in both ears for over one year, but of late is much worse.

Hearing distance, left ear: Watch = 8 inches, whisper = 14 feet.

TUNING-FORK REACTION—LEFT EAR.

	C — 1	C	C1	C2	C3	C4
Rinné	b. c.	a. c.	a. c.	a. c.	a. c.	a. c.
	1	11	11	14	11	8
Schwabach	9	9	7	0	2	0

Galton's whistle = 3 — 1/10.

Hearing distance, right ear: Watch = 8 inches, whisper = 12 feet.

TUNING-FORK REACTION—RIGHT EAR.

	C — 1	C	C1	C2	C3	C4
Rinné	a. c.	a. c.	a. c.	a. c.	a. c.	a. c.
	6	8	10	11	6	2
Schwabach	4	8	0	0	0	0

Galton's whistle = 3 — 3/10. Weber's test = negative.

Otoscopic examination; left ear—Membrana tympani greatly retracted, marked opacity, especially anterior; no light reflex; short process of hammer very prominent. Right ear—Marked retraction of drum membrane; diffused opacity; no light reflex.

Diagnosis: Otitis media et interna.

Treatment: Coniin hydrobromat gr. 1/60, three times daily.

February 12. Tinnitus somewhat diminished.

February 19. Tinnitus is much better, but last night after taking gr. 1/60 it gave rise to some vertigo which lasted about one hour.

February 26. Tinnitus is only present when she is in the recumbent posture, and in the morning.

Case XIII. Mary L., 47 years of age; seen for the first time on March 20, 1895. She complains of constant tinnitus in both ears for three months.

Hearing distance, left ear: watch = zero, whisper = 5 feet.

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TUNING-FORK REACTION—LEFT EAR.

	C	C^8
Rinné.....	a. c.	a. c.
	14	12
Schwabach	6	6

Galton's whistle = 2 — $^1/_{10}$.

Hearing distance, right ear: watch = light pressure, whisper = 14 feet.

TUNING-FORK REACTION—RIGHT EAR.

	C	C^8
Rinné	a. c.	a. c.
	18	12
Schwabach	8	6

Galton's whistle = 2 — $^1/_{10}$. Weber's test = in both ears.

Otoscopic examination; left ear—Hammer vessels injected; light reflex; a hazy dot. Right ear—About the same as left.

Diagnosis: Otitis interna with slight otitis media.

Treatment: Coniin hydrobromat gr. $^1/_{60}$, three times daily.

May 11. Tinnitus very much diminished, and the feeling of fullness in the ears has disappeared.

May 18. Has had the tinnitus present only at times.

May 25. Has not been taking any coniin for nearly one week and tinnitus is much worse.

June 1. Tinnitus somewhat better.

June 8. Has had very slight tinnitus during morning only.

Case XIV. Laura S., 39 years of age; seen March 30, 1895. For about twelve years some dullness of hearing with constant tinnitus in both ears.

Hearing distance, left ear—watch = zero, whisper = 4 feet.

TUNING-FORK REACTION—LEFT EAR.

	C_{-1}	C	C^1	C^2	C^8	C^4
Rinné.....	b. c.	b. c.	b. c.	a. c.	a. c.	a. c.
	0	3	6	14	12	8
Schwabach	7	14	9	12	8	0

Galton's whistle = 1 — $^7/_{10}$.

Hearing distance, right ear: watch = zero, whisper = 4 inches.

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TUNING-FORK REACTION—RIGHT EAR.

	C—^{1}	C	C^1	C^2	C^3	C^4
Rinné.....	b. c.	b. c.	b. c.	b. c.	b. c.	a. c.
	0	0	0	5	3	0
Schwabach	5	9	9	15	10	0

Galton's whistle = 2 — $^6/_{10}$. Weber's test = in both ears.

Otoscopic examination; left ear—Membrana tympani slightly dulled and succulent; light reflex only a dot. Right ear—Membrana tympani moderately retracted; slight dullness; light reflex a dot.

Diagnosis: Otitis interna et media.

Treatment: Coniin hydrobromat gr. $^1/_{60}$, three times daily.

April 6. Has contracted a very bad cold and tinnitus is about the same.

April 13. Tinnitus very much diminished.

April 30. Tinnitus not as loud nor as constant.

May 6. Tinnitus is about the same as formerly, and she thinks it disturbs her stomach.

Case XV. R. M., 18 years of age; first came to me on March 6, 1895, complaining of deafness and constant tinnitus in both ears of four months duration which seems to be getting worse.

Hearing distance, left ear: watch = 6 inches, whisper 18 feet.

TUNING-FORK REACTION—LEFT EAR.

	C—^{1}	C	C^1	C^2	C^3	C^4
Rinné.....	b. c.	b. c.	b. c.	b. c.	b. c.	a. c.
	0	0	4	10	12	9
Schwabach	8	9	10	17	13	8

Galton's whistle = 1 — $^7/_{10}$.

Hearing distance, right ear: watch = 1 inch, whisper = 12 feet.

TUNING-FORK REACTION—RIGHT EAR.

	C—^{1}	C	C^1	C^2	C^3	C^4
Rinné.....	b. c.	b. c.	b. c.	b. c.	a. c.	a. c.
	0	2	5	7	12	8
Schwabach	7	8	10	15	10	5

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Galton's whistle = 1 — $^{8}/_{10}$. Weber's test + in the left ear.

Otoscopic examination; left ear—Membrana tympani slightly succulent; light reflex broken, somewhat thickened; incus shows. Right ear—About the same as the left ear.

Diagnosis: Otitis media catarrhalis chronica with slight nerve involvement.

Treatment: Coniin hydrobromat gr. $^{1}/_{60}$, three times daily.

March 10. Tinnitus about the same.

March 15. Has been taking coniin gr. $^{1}/_{60}$ regularly, but does not notice any improvement. Increased dose to gr. $^{1}/_{40}$, three times daily.

March 22. About the same as formerly, no improvement; gr. $^{1}/_{30}$, three times daily.

March 29. Notices some improvement in the tinnitus; no disturbance; gr. $^{1}/_{30}$, four times daily.

April 2. This morning some gastric disturbance. Tinnitus about the same, but not as loud as before taking coniin.

Case XVI. Harry S., 35 years of age; seen first on March 2, 1895. For two months hardness of hearing with, at times, severe tinnitus in both ears.

Hearing distance, left ear: watch = contact, whisper = 25 feet.

TUNING-FORK REACTION—LEFT EAR.

	C — ^{1}	C	D^{1}	C^{2}	C^{3}	C^{4}
Rinné.....	b. c.	a. c.	a. c.	a. c.	a. c.	a. c.
	6	20	18	25	17	6
Schwabach	8	7	5	10	10	0

Galton's whistle = 2 — $^{7}/_{10}$

Hearing distance, right ear: watch = 6 inches, whisper = 27 feet.

TUNING-FORK REACTION—RIGHT EAR.

	C — ^{1}	C	C^{1}	C^{2}	C^{3}	C^{4}
Rinné.....	b. c.	a. c.	a. c.	a. c.	a. c.	a. c.
	10	12	14	25	16	8
Schwabach	11	6	5	10	10	0

Galton's whistle = 2 — $^{5}/_{10}$. Weber's test + in right ear.

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Otoscopic examination; left ear—Membrana tympani slightly dulled and succulent; light reflex shortened. Right ear—Drum membrane much the same.

Diagnosis: Otitis media et interna.

Treatment: Coniin hydrobromat gr. $^1/_{60}$, three times daily.

March 9. Tinnitus completely disappears at times but returns; feels good.

March 15. Tinnitus about the same; after taking three doses of coniin felt opression over the precadial region with some vertigo.

March 30. Has not been taking any coniin for four days. Tinnitus about the same but it is less than it was before treatment.

April 2. Coniin gr. $^1/_{60}$, twice daily.

April 5. About the same; coniin gr. $^1/_{30}$, three times daily.

April 12. No disturbance; tinnitus somewhat better; increased dose to gr. $^1/_{30}$, three times daily.

April 19. Tinnitus very much improved. (Patient did not return.)

Case XVII. James H., 50 years of age; was seen for the first time on March 18, 1895. Has had deafness and tinnitus in the left ear for about twenty years; in the right for three years.

Hearing distance, left ear: watch = light pressure, whisper = 2 feet.

TUNING-FORK REACTION—LEFT EAR.

	C	C^1	C^2	C^3	C^4
Rinné	a. c.	a. c.	a. c.	a. c.	a. c.
	11	8	16	11	5
Schwabach	7	5	0	0	0

Galton's whistle = 4 — $^2/_{10}$.

Hearing distance, right ear: watch = light pressure, whisper = 12 feet.

TUNING-FORK REACTION—RIGHT EAR.

	C	C^1	C^2	C^3	C^4
Rinné	a. c.	a. c.	a. c.	a. c.	a. c.
	10	11	12	11	5
Schwabach	0	0	4	0	0

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Galton's whistle = 3 — $^{8}/_{10}$. Weber's test + in right ear.

Otoscopic examination; left ear—Drum membrane slightly retracted; light reflex broken and dim. Right ear—About the same as the left.

Diagnosis: Otitis interna.

Treatment: Coniin hydrobromat gr. $^{1}/_{60}$, three times daily.

March 9. Tinnitus has changed in character, and does not seem as loud.

March 23. Has not been taking any medicine for one week but tinnitus does not seem to be any worse.

April 11. Has been taking coniin gr. $^{1}/_{40}$, three times daily, for one month, and while taking it does not experience any tinnitus; but for last four days has not taken any coniin and the tinnitus has returned slightly.

Apri 18. About the same.

April 25. No disturbance; tinnitus much better. (Patient did not return.)

Case XVIII. Gustave L., 42 years of age; was first seen on December 26, 1894. Deafness in, and discharge from right ear since childhood with some tinnitus. He recovered from this, but returned on May 20, 1895, complaining from severe constant tinnitus in both ears.

Hearing distance, left ear: watch = contact, whisper = 15 feet.

TUNING-FORK REACTION—LEFT EAR.

	C^1
Rinné	b. c.
Schwabach	12 / 18

TUNING-FORK REACTION—RIGHT EAR.

	C^1
Rinné	b. c.
Schwabach	15 / 19

Weber's test + in the left ear.

Hearing distance, right ear: watch = 2 inches, whisper = 20 feet.

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Otoscopic examination; left ear—Posterior perforation showing incudo-stapedial joint enclosed in tissue. Right ear—Inferior perforation.

Diagnosis: Otitis media purulenta residiosa.

Treatment: Coniin hydrobromat gr. $^1/_{60}$, three times daily.

May 25. Has been taking coniin regularly, and thinks tinnitus is somewhat diminished.

June 6. Tinnitus is about the same.

June 8. About the same; gr. $^1/_{80}$, three times daily.

June 15. Some gastric disturbance; discontinued the use of coniin.

Case XIX. George A. B., 66 years of age, first came under observation February 14, 1895. He has been troubled for about one year with deafness and constant tinnitus in both ears, which is getting worse.

Hearing distance, left ear: Watch = contact, whisper = 10 feet.

TUNING-FORK REACTION—LEFT EAR.

	C	C^1	C^2	C^3	C^4
Rinné	a. c.	a. c.	a. c.	a. c.	a. c.
	25	18	28	15	9
Schwabach	9	7	9	6	0

Hearing distance, right ear: Watch = pressure, whisper = 9 feet.

TUNING-FORK REACTION—RIGHT EAR.

	C	C^1	C^2	C^3	C^4
Rinné	a. c.	a. c.	a. c.	a. c.	a. c.
	15	12	20	12	6
Schwabach	14	10	11	10	0

Weber's test = in both ears.

Otoscopic examination: Left ear—Membrana tympani is greatly retracted and very opaque; no light reflex. Right ear—Membrana tympani greatly retracted and very opaque; light reflex small, dim and central.

Diagnosis: Otitis interna et media.

Treatment: Coniin hydrobromat gr. $^1/_{60}$, three times daily.

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February 21. Tinnitus somewhat improved; gr. $^1/_{40}$, three times daily.

February 27. Head feels clear; marked improvement in the tinnitus.

March 5. About the same; gr. $^1/_{80}$, three times daily.

March 10. Tinnitus somewhat improved; gr. $^1/_{80}$, four times daily.

March 15. Has had no tinnitus in the left ear for two days; about the same in the right ear.

March 20. No disturbance; no tinnitus, except at night slightly.

Case XX. Lena E., 24 years of age, seen for the first time April 25, giving the following history: For about one year dullness of hearing, with a distressing, constant tinnitus in both ears, which seemed to remain about the same.

Hearing distance, left ear: Watch = 3 inches, whisper = 12 feet.

TUNING-FORK REACTION—LEFT EAR.

	C	C^1	C^2	C^3	C^3
Rinné	b. c.	b. c.	b. c.	a. c.	a. c.
	0	9	12	12	9
Schwabach	14	16	15	10	3

Galton's whistle = 1 — $^8/_{10}$.

Hearing distance, right ear: Watch = 6 inches, whisper = 14 feet.

TUNING-FORK REACTION—RIGHT EAR.

	C	C^1	C^2	C^3	C^4
Rinné	b. c.	a. c.	a. c.	a. c.	a. c.
	5	11	16	12	11
Schwabach	10	9	14	11	6

Galton's whistle = 1 — $^5/_{10}$. Weber's test + in the left ear.

Otoscopic examination: Left ear—Membrana tympani, great retraction and opacity; no light reflex. Right ear—Membrana tympani somewhat retracted and opaque; no light reflex; redness along malleus handle.

Diagnosis: Otitis media catarrhalis chronica.

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Treatment: Coniin hydrobromat gr. $^1/_{60}$, three times daily.

April 28. About the same.

May 2. Tinnitus about the same; gr. $^1/_{40}$, three times daily.

May 10. No improvement; gr. $^1/_{40}$, four times daily.

May 13. Very slight improvement.

May 25. Head feels clear; tinnitus about the same; gr. $^1/_{30}$, three times daily.

June 1. About the same.

Case XXI. John J. C., 26 years of age, seen first June 11, 1895, giving the following history: Eight months ago fell from a ladder while at work and sustained a contusion of the brain, he at once became unconscious and remained so for three days. He does not remember having had any bleeding from the ear, nor did he have any discharge subsequently. Ever since he left the hospital he has a staggering gait with some vertigo and a distressing tinnitus in the left ear. The right ear does not seem to bother him.

Hearing distance, left ear: Watch = pressure, whisper = 17 feet.

TUNING-FORK REACTION—LEFT EAR.

	C	C^1	C^2	C^3	C^4
Rinné	b. c.	b. c.	b. c.	a. c.	a. c.
	0	0	6	9	6
Schwabach	6	5	10	6	2

Hearing distance, right ear: Watch = 16 inches, whisper = 25 feet.

TUNING-FORK REACTION—RIGHT EAR.

	C	C^1	C^2	C^3	C^4
Rinné	a. c.	a. c.	a. c.	a. c.	a. c.
	10	18	19	18	8
Schwabach	6	5	7	6	0

Weber's test + in the right ear.

Ophthalmic examination: Left ear—Membrane tympani normal, except light reflex, small and dim. Right ear—Same as the left.

Diagnosis: Fracture of temporal bone, otitis media et interna.

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Treatment: Coniin hydrobromat gr. $^1/_{60}$, three times daily.

June 19. Has been taking coniin regularly, but does not notice any change in the tinnitus.

June 22. Tinnitus seems to be worse; gr. $^1/_{60}$, six times daily.

Jnne 30. Tinnitus not quite so bad; head feels a great deal better. (Patient did not return.)

Case XXII. A. M., 29 years of age, seen for the first time June 20, 1895. For about five years a constant, high-pitched tinnitus in both ears, being worse at night, and at times does not permit him to sleep.

Hearing distance, left ear: Watch = 15 inches, whisper = 20 feet.

TUNING-FORK REACTION—LEFT EAR.

	C	C^1	C^2	C^3	C^4
Rinné	a. c.	a. c.	a. c.	a. c.	a. c.
	18	15	25	15	10
Schwabach	8	6	7	5	4

Hearing distance, right ear: Watch = 15 inches, whisper = 20 feet.

TUNING-FORK REACTION—RIGHT EAR.

	C	C^1	C^2	C^3	C^4
Rinné	a. c.	a. c.	a. c.	a. c.	a. c.
	16	14	18	16	10
Schwabach	5	7	9	8	5

Otoscopic examination: Left ear—Membrana tympani, great retraction and opacity; light reflex dim and broken. Right ear—Same as left.

Diagnosis: Otitis interna et media.

Treatment: Coniin hydrobromat gr. $^1/_{60}$, six times daily.

June 23. Tinnitus is somewhat better and disappears at times for a short while.

June 25. Tinnitus for last two days has only been present at night; increased dose to gr. $^1/_{30}$.

June 30. Has had no tinnitus for two days.

July 3. Has not had any tinnitus all day. Patient did not return.

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Case XXIII. Thomas T. D., 45 years of age, was first seen on June 28, 1895. For two years a constant tinnitus in the left ear, which seems to remain about the same.

Hearing distance, left ear: Watch = 1 inch, whisper = 20 feet.

TUNING-FORK REACTION—LEFT EAR.

	C	C^1	C^2	C^3	C^4
Rinné	a. c.	a. c.	a. c.	a. c.	a. c.
	18	17	20	17	7
Schwabach	6	5	4	4	0

Hearing distance, right ear: Watch = 3 inches, whisper = 20 feet.

TUNING-FORK REACTION—RIGHT EAR.

	C	C^1	C^2	C^3	C^4
Rinné	a. c.	a. c.	a. c.	a. c.	a. c.
	20	15	15	15	10
Schwabach	5	5	8	7	3

Weber's test + in the right ear.

Treatment: Coniin hydrobromat gr. $^1/_{60}$, three times daily.

July 2. No improvement, louder if anything; increased dose to gr. $^1/_{60}$, four times daily.

July 6. No improvement, is about the same; gr. $^1/_{30}$, six times daily.

July 14. No improvement.

Six cases were very much improved, six were improved somewhat, one was entirely cured and ten were not benefited at all.

The best results were obtained in the cases were both the middle and internal ear were effected.

The largest dose given was gr. $^1/_{30}$, and anything higher than this usually gave rise to gastric disturbances, but could be somewhat averted if the precaution was taken to take the dose after meals.

187 East Twenty-Eighth Street.

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AURAL VERTIGO.*

By J. Walter Park, M. D.
OF HARRISBURG, PA.

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THE term vertigo means a "turning" and is used to designate a disturbance of the equilibrium of the body with surrounding objects, a real or a seeming movement of external objects. The popular synonym for vertigo is giddiness. The principle varieties in their relative frequency are auditory, epileptic and cerebral. The ocular and gastric varieties I consider as exciting causes, and will, therefore, be considered as such when I speak of the etiology and treatment. I have, for some time, studied the form which in eighty per cent of all cases of vertigo is, I think, due to some auditory disease, or disturbance of the sound perceiving apparatus, viz: Auditory vertigo. Physicians generally attribute the majority of their cases of vertigo to gastric disturbances; but this you will find in the most of them upon a thorough examination of their hearing to be erroneous. The cause is in the middle ear, labyrinth, or semi-circular canals. It is, therefore, a symptom of some pathological changes taking place within the organ of hearing.

Etiology: Aural vertigo seems to result from almost any disease which interferes with the labyrinth or with the nerve endings therein contained. It is not generally met with in children, or as a result of any inflammatory or carious conditions of the middle ear. It is seldom met with in people under 20 years of age, occasionally between 20 and 30, and frequently

* Read before Dauphin Co. Med. Soc., March, 1895.

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after 30. The majority of cases occur between 30 and 60 years, and are more frequently seen among men than women. The exact changes that take place in the labyrinth are not definitely known. Gouty and syphilitic causes are occasionally met with. Sometimes it comes on from exposure to cold, as well as slow and degenerative disease of the labyrinthine membrane or of the acoustic nerve. Errors of refraction and gastric disturbances, as heretofore mentioned, are only exciting causes. The most frequent causes in my practice have been chronic catarrhal changes in the middle ear. A careful examination will generally show a retracted tympanic membrane and handle of the malleus. The posterior and anterior folds are quite tense, and very often considerable ankylosis of the ossicles exist. These conditions may exist and no vertigo be present, but in the majority of all cases of aural vertigo these pathological changes are visible, and one of the positive proofs are to take a blunt or square-ended probe and make gentle pressure on the short process of the malleus and you generally produce the same vertiginous sensations that the patient complains of when an attack of vertigo comes on.

Symptoms: The symptoms of aural vertigo are numerous and varied in character. It generally comes on in paroxysms, sometimes every few hours, and at other times once a day or every few days, or only every few weeks. They may come on in the night when the patient is asleep as well as in the day time. When they occur at night, and the patient is relieved by getting up from the horizontal position, it is generally due to some trouble in the semi-circular canals. Some patients complain of a sensation as if falling from a great height, and are often awakened by a sharp report or snapping sound. This is generally caused by a sudden contraction of the tensor tympani or stapedius muscles. Tinnitus aurium is almost always a constant symptom and very often increases in intensity as the vertigo becomes more marked. Deafness on the affected side, either slight or severe, is present in very near all cases. When an attack comes on the patient generally reels toward the affected side, and may have the sensation of either falling forwards, backwards, or in a circular movement. These rotary sensations often produce vomiting of a severe type. I had a patient lately who, sometimes, when walking along the street and suddenly turn a corner, would have an attack which would

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compel her to sit down before she could proceed any further, and have intense nausea and vomiting attacks without a sign of gastric disturbance at any other time. Diplopia is a frequent symptom in severe cases, generally coming on during an attack, and is mostly caused by the nystagmatic movements of the eyeballs which is present in most cases, generally during a paroxysm. These symptoms disappear when the attack ends.

Diagnosis: Aural vertigo is generally easily diagnosed, especially when it occurs in conjunction with tinnitus and deafness, be it either of a mild or a severe type. The fact that an attack occurs during some digestive disturbance does not prove it to be of gastric origin. A patient may have attacks of acute dyspepsia for some time and yet have no vertigo, and may then become slightly or entirely deaf in one ear, and after that have attacks of vertigo every time he has an attack of his dyspepsia. Acute attacks of dyspepsia bring on attacks of vertigo after the primary cause is once established and known to be of aural origin. Errors of refraction in like manner are exciting causes and are explained in the same manner as those of gastric origin; they assist in making up a diagnosis in the following explanation: By having both of these disturbances corrected the patient may still have some vertigo, or may not have until an acute attack of dyspepsia sets in or he lays off his glasses when the attacks again come on, but when we remove the aural defects he can then have attacks of dyspepsia or lay off his glasses and have no return of vertigo. Sudden movements of the head in either direction and bringing on an attack is also further proof of it being of aural origin. From cerebral disease it is distinguished by the tinnitus and loss of consciousness lasting much longer in the former while, in fact, hardly any loss of consciousness exists in the latter as well as other brain symptoms which are not present, as a rule, in cerebral disease, similar to those in aural troubles.

There are some other forms of vertigo as a result of hysteria, anemia, arterial degeneration, and such as occur in the aged from obscure causes, but all these are easily distinguished by the absence of aural symptoms. Statistics prove as I have mentioned heretofore, that about eighty per cent of all vertigo cases are caused by some pathological changes taking place in the middle or internal ear.

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Prognosis: The prognosis in labyrinthine disease is generally serious. It does not generally cease until the accoustic nerve or its nerve endings and its functions are entirely destroyed. When the cause is found to be in the middle ear the prognosis is generally favorable if the treatment is persistently and intelligently carried out.

Treatment: The results of treatment of aural vertigo in my experience has generally been good when the cause was due to pathologic changes in the middle ear; and a failure in those from labyrinthine disease. When a sudden attack comes on and the change is due to pathologic conditions in the middle ear, the quickest relief is generally obtained by syringing the ear with water as hot as the patient can bear it. Relief invariably follows such cases when the vertigo is caused by pressure upon the labyrinth superinduced by a retracted and ankylosed condition of the tympanic membrane and handle of the malleus or a spasmodic contraction of the tensor tympani muscle. The regular and persistent practice of massage of the ossicles is good treatment, and will also generally relieve an attack of vertigo for the time being. The regular introduction of menthol vapor into the middle ear, has in my practice produced some good and permanent results. Pilocarpin given regularly in such doses as to produce slight diaphoresis is generally followed by good results in all cases due to catarrhal conditions of the middle ear, especially where the formative stage of any adventitious material is of recent date. Quinin is recommended by some authors, but I have not found any beneficial results from it in cases I have tried it in. In cases of a gouty or rheumatic tendency, the salicylates in conjunction with the above treatment do well; those with a syphilitic history should be treated accordingly, and improvements are generally soon noticed. The bowels should be well regulated as well as all anemic and menstrual disorders corrected. All errors of refraction or gastric disturbances should be carefully corrected. Out of a large number of cases of errors of refraction I cannot recall a single case of genuine vertigo that was solely due to eye strain, but on the contrary, when they were very carefully examined, the eye strain proved to be the exciting cause. They may even have perfect hearing and yet have some disturbance in the semi-circular canals which brings on an attack of vertigo. When none of these remedies I have suggested do any good, as

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a last resort, removal of the malleus and incus have, according to the reports of Dr. Burnette, of Philadelphia, given permanent relief in such cases as have been the result of chronic catarrhal conditions of the middle ear. Lastly, I desire to call attention to the fact that all existing catarrhal conditions of the nose and naso-pharynx should not be forgotten for they are, after all, the indirect causes of most all middle ear disturbances. All these causes, when treated intelligently, are conducive to good results.

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ETHMOIDITIS SUPPURATIVA, ACUTA AND CHRONICA—CAUSE, DIAGNOSIS AND TREATMENT WITH THE ANATOMY OF THE ETHMOID.

By Jas. H. Farber, M. D.,
DAYTON, OHIO.

IT is only in the last few years that diseases of the accessory sinuses of the nares have been recognized, and as a consequence the literature on this subject is scattered. Having been a sufferer from a suppurative affection of the ethmoid for some years myself, I have given much time to its study.

Anatomy: The ethmoid cells are embraced in that part of the ethmoid bone known as the lateral masses.

They extend from the cribriform plate to the middle meatus of the nose. The middle turbinated bone being a part of the "mass" and containing some of the cells. The outer boundary of the "mass" is the "orbital plate." The inner boundary is the thin bony plate bounding the superior meatus and the roof of the nose. The cribriform plate also enters into this cellular formation. So that for practical purposes the cells lie close to and between the eyes on a plane of the lower border of the eye. They communicate with the orbit through the anterior and posterior ethmoidal foramen, with the cranial cavity through the cribriform plate, with the nares through the infundibulum and with the frontal sinuses, and the anterior cells with each other.

The mucous lining of the nares is continued into these cells and up into the frontal sinuses. Their blood-supply comes from the ophthalmic artery and the spheno-palatin branches of the internal maxillary.

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Their nerves are derived from the fifth nerve, Meekel's ganglion and the special sense nerve, the olfactory.

Structure is cellular, cancellated, consisting of thin, bony plates separating small cell-like spaces, allowing small interspaces for communication with each other.

Function, (possibly) as a reasonater to the voice, partly to "filter" and distribute odor to the special nerve.

I will now confine this article to acute and chronic suppurative disease of the *anterior* ethmoidal cells.

Such inflammations are common occurrences.

They are the result of acute rhinitis which has extended through them to the frontal sinuses which, when resolution occurs, must subside either in the direction from which it came, or what is more common perhaps, it begins to subside from the frontal sinuses and continues down through the cells.

In all cases you will get a history of one or of several attacks of inflammation of the frontal sinuses or *general* "bad cold," severe frontal headache, stuffed nose, chill, fever, etc., an acute suppurative ethmoiditis is now in progress. Many cases of this character go on to complete resolution and cure; many more end in the chronic form.

The ordinary treatment prescribed for "*heavy colds*" is indicated. But in these cases it should be rigidly carried out, confinement to the house eight or ten days, purgation, hot foot baths, opium, belladonna, aconite, quinin.

Chronic ethmoiditis anterioris, if I may be permitted to call it so, is a very common occurrence. It is probably more commonly met with since "la grippe" made its appearance.

Symptoms: The chief symptoms are frequent headaches, and the presence of a thick, almost purulent, discharge, and a large tough scab coming from *one side* of the nose with a more or less catarrhal condition of the naso-pharynx.

Diagnosis: One symptom or condition is diagnostic; I refer to the discharge. The peculiar form of the scab, and the fact that it is loosened and expelled about every second day.

In situ it is on the middle turbinate, near its anterior extremity, extending over to the septum and completely blocking the superior meatus. The secretion is soft, not very tenacious, greenish white in color. On its under side it is hard and dry, brownish yellow, similar in appearance to a scab from a granulating skin wound. It is *deeply concave*, fitting the convex

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turbinated, is hard, and holds its form when discharged. It is characteristic and diagnostic. The secretion can not be easily expelled by the patient on account of its location. The pus dripping from above gradually fills the superior meatus and runs back to the naso-pharynx, setting up the naso-pharyngeal catarrh and the disagreeable tracheitis of not uncommon occurrence, yet not so often recognized. There is practically no odor perceptible to persons in proximity to the patient. But he, himself, is conscious of a slight stench. The sense of smell is not greatly, although somewhat impaired.

Treatment: Remedy the existing hypertrophies, if any. Keep the nares clean. But this alone will not cure. You must open up the cells. How to do this is the next question. A careful study of the anatomy of the part will show the natural drainage to be the infundibulum. The opening of the infundibulum is in the middle meatus, just anterior to the middle turbinated convexity. The middle turbinated body itself is a part of the lateral mass of the ethmoid, and therefore a part of the cellular or cancellated bone, and of course contains cells which connect with the anterior ethmoidal cells, and it is for this reason that the secretion is found on the middle turbinated.

If the opening of the infundibulum can be found readily I pass a probe into it as far as possible, and if I find it closed I open it up with a dental drill. Usually, however, it is necessary to cut off with a small bone forceps the anterior end of the middle turbinated a sufficiently large piece to prevent accumulation of secretion, and thus at once give drainage and prevent the secondary troubles of the naso-pharynx and trachea. There will be much bleeding, which is readily controlled by tannic acid, styptic or perchlorid of iron or by plugging. When the parts have recovered from this operation, the dentist's drill is again brought to bear upon the cells, its direction starting from the level of the amputated turbinated backwards upwards and outwards towards the anterior ethmoidal foramen, the location of which is readily seen or approximated. The structure is easily penetrated and the pain *not great.* Cocain will alleviate, but a good patient will stand the operation without any anesthetic, local or general. Time and delicacy are necessary. Two or three openings are sufficient. The size of the "burr" may be best put at one-eighth of an inch. They need to penetrate

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but one-quarter to one-half an inch, or until the drill is found to have penetrated a cell.

Hemorrhage is not excessive, but is more or less oozing and constant, and the patient had either best be kept under surveillance or nose packed well. Usually, however, it is safely, nay easily controlled.

It is flushed with either bichlorid, 1 :4,000, or with the peroxid of hydrogen. The openings being cauterized on the edges with galvano cautery. A successful issue is not in doubt.

Fortunately for the patient the disease is not dangerous to life, *per se*. But its train of secondary troubles are very annoying and disagreeable. It has no tendency to get well of itself.

It seems to *prevent* many subsequent attacks of frontal inflammation.

It is usually attended with headaches, however.

The sense of smell is lost in but slight degree.

Many unsatisfactory treatments of "catarrh" will be prevented by the recognition of this trouble.

Many patients will have ocular demonstration of their physician's skill if it is treated by systematic and operative interference.

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TRANSLATIONS FROM CURRENT FOREIGN OTOLOGICAL LITERATURE. (ABRIDGED.)

By H. A. Alderton, M. D.,
OF BROOKLYN.

CHOLESTEATOMA OF THE MIDDLE EAR. A GLANCE AT THE PRESENT STATUS OF THE CHOLESTEATOMA QUESTION TOGETHER WITH SOME NEW AND ORIGINAL OBSERVATIONS ON THE GENESIS OF THIS FORMATION.

Dr. Haug, Assistant Aural Surgeon Royal University Polyclinic at Munich (*Centralblatt f. Allg. Path.*, VI Band, 1895). The editors have asked me to report upon the present status of the cholesteatoma question, and my pleasure in responding is the greater because I have of late occupied myself specially with the subject in clinical and anatomical work, and am, perhaps, in a position in consequence of the wealth of material at my command, to advance some new principles.

This article will embrace solely the question of the genesis of cholesteatoma, and being in great part pathological and anatomical, will not enter the field of symptomatology or therapeutics.

There is really no pathological process in the organ of hearing which has so awakened the interest of pathological anatomists and physicians, and which has called forth such difference of opinion regarding its origin as cholesteatoma. For this reason, and also because, even at the present days, the cause of this formation does not appear to be fully explained; it will not be out of place to consider first, the several widely differing hypothesis which have been advanced in the course of the last decade. And I should like to add extracts from the wealth of material which I have gathered personally in ten years' observation, and

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so, perhaps, we may succeed in coming a little nearer to the solution of a question which is already ripe, by reason of the results attained through united clinical and anatomical research.

First, let us come to a clear understanding of what we mean by a cholesteatoma. We understand it to be a growth which varies in size from a cherry stone to a pigeon's egg; which, even in exceptional cases, attains the size of a medium sized apple which is generally of round form or also (seldom) oblong; it presents a yellowish-white or more frequently a bluish-white appearance which may be compared to the tender luster of mother-of-pearl. It is not a compact molecular body which is the rule with true growths, but is composed of a great number of concentrical lamellæ packed together in a manner resembling the shades of an onion; the lamellæ again consist of large polygonæ, flat epithelial cells which do not usually present a nucleus and which are the seat of attending cholesterine elements and micro-organisms.

Its favorite place of lodgement is the vault of the tympanum, the so-called recessus epitympanicus (Atticus) and the antrum of the mastoid. However, we sometimes find it in the auditory canal and in the inferior portions of the cavum tympani, either connected with collections in the aforesaid localities or as an isolated, independent foreign body. But, wheresoever the situation, it is always snugly encysted in the petrous portions of the temporal bone upon which it often works so deleteriously that we cannot attach too great importance to the danger of this process in its effects upon the general organism.

With regard to the genesis of this foreign substance—I avoid with intention the expression growth-Neoplasma, for reasons which we shall soon learn—Virchow's view, that it was analogous to the peculiar pearly epitheliomatous tumors of the petrous bone which often appear in the brain, meninges and other parts of the body[1] was formerly accepted because we have here to do with true heteroplastic growths of an epidermal nature when epidermic elements were met with on a spot where nature had not provided an epidermis, and, furthermore, where no epithelial cells existed. Only a few years ago he and a large number of pathologists and anatomists stoutly defended this

[1] I recently had the opportunity, accidentally, to observe a true pearly epitheliomatous-like tumor about the size of a small apple on the palm of the hand.

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point of view when he laid much stress upon the relationship of cholesteatoma of the ear to dermoid and atheromatous cysts.

Virchow's view was somewhat modified by a few of its supporters who professed to see a congenital formation in cholesteatoma. Böttcher then tried to define it as a primitive development of the epithelium of the Aquaiductus vestibuli; while Küster and Mikuliez tried to classify it with branchial cystoma, because epidemic elements might have found their way into the tympanic cavity at the time of contact with the upper branchial cleft, and in case of inflammation (in the cavity) its acute or chronic nature would so excite these previously confined epithelial bodies as to develop a cholesteatoma. These two writers also admitted the possibility of an independent development.

Then Von Tröltsch, by reason of his clinical experience, contested these purely hypothetical views, and advanced the opinion that in most cases it was owing to a simple collection of old hardened pus and dead skin tissues which, exerting great pressure upon the neighboring parts, caused a transformation of the epithelium. In consequence of this pressure, cell elements would be developed with unusual rapidity, and in a metamorphosed form, and the growth would, therefore, assume the extraordinary resemblance to scaly epidermis.

It was to be expected that this theory advanced by the leading otologist of his time would be accepted wholly or with unimportant modifications by the greater number of aurists. Politzer then explained at least a part of the cholesteatoma thus: that from the congested mucous membrane of the tympanic cavity tubular involutions bearing epithelial germs were exfoliated, whose epithelium, when the opening into the canal was obstructed, ran into independent prolifications. As, however, in such a condition cylindrical epithelium usually results, the cylindrical epithelium is entirely transformed into pavement epithelium, and the cholesteatoma is formed by a transformation of the epithelium.

Again, Wendt looked for the origin of cholesteatoma in an analogy between it and its corresponding otitis externa desquamation; in a desquamative inflammation of the mucous membrane of the tympanic cavity, so that after the healing of the process as we have often enough observed, and which we shall specially note again, an epidermoidal transformation of the

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former cylindrical epithelial germ-bearing membrane takes place, an independent growth is maintained and the cholesteatoma is formed.

Wendt's view has a certain leaning towards the opinions which obtain to-day. Also Lucae inclines to think as we do to-day when he said (rather obscurely, it is true,) that by means of the continual throwing out of granulation tissue a crystallization of the epidermis elements occurred, and that through the casting off and continual removal of these granulations of the epithelium lining the edge of the membrana tympani, a cholesteatoma might be found.

The most plausible explanation of the genesis of cholesteatoma, however, has been given in one day by Habermann. It seems to come nearest to the truth because it is based on facts, supported by clinical observation. According to this explanation a hyperplasia of the epithelium of the external ear is often formed in consequence of chronic inflammation, and this pavement epithelium in developing grows into the tympanic cavity through a perforation of the drum membrane. "When the inflammation continues the hyperplasia of the growing epithelium continues also and profiliates, thereby filling the entire vault with scaly, glistening masses." (Habermann c. l. c., p. 2.) This primitive development of the pavement epithelium may take place in the auditory canal as well as in the membrana tympani, and particularly on the epidermic margin of a drum perforation where, as I have often observed personally, the epithelium forms a callous, circum-vallated edge. Sometime after Habermann's explanation Bezold expressed an analogous one, and was of the opinion that cholesteatoma rested upon the to him established fact, thus: the epidermis developed and spread in great part along the floor of auditory canal and tympanic cavity. We shall see later that a growth is, indeed, often found along the floor, but for cholesteatoma that is not absolutely one of its conditions.

We conclude, that in a great number of cases, Habermann's idea may be substantiated thus: that in any chronic suppuration of the middle ear, no matter what otological condition called it primarily into being, the mucous membrane is transformed by means of a perforation of the drum membrane into an ulcerated surface, which at times, is partly divested of its superficial epithelium, and even increased and dilates. Now,

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if at some undetermined time, the suppuration begins to involute, the tendency to healing will be exhibited by a casting off of epithelial cells on both sides, interiorly towards the cylinder epithelium and exteriorly towards the pavement epithelium. But, as the pavement epithelium has a greater tendency to increase along the floor than the cylinder epithelium; and then again, because a greater power of resistence dwells in the superficial epidermic layer than in the simple layer of epithelium lining the tympanic cavity; this scaly epithelium, so rich in cells, once formed, will not be less liable to withstand the deleterious and inflammatory renewals of this process, but on the contrary, it must and will proliferate, and the more particularly, as we shall soon see by my exhibition, when the peculiar conditions in which alone it can originate are visible.

But, according to Habermann, cholesteatoma can be developed in still another way; not as already stated, by the lining of the walls of the tympanic cavity with foreign epithelium, but by the formation through some extraneous opening of a sack-like pouch in the middle ear so that the cholesteatoma with its pavement epithelium rests on the normal cylindrical epithelium of the tympanic vault. Again it may be developed in two different ways: the hyperplastic epithelium on the edge of the perforation may turn in along the circumference of the perforation, or in some cases the edges of the lacuna may present granulations which may develop into granulations similar to those which cover the pavement epithelium, and form strong, dense, interlacing bodies, horn-like at the center which, in increasing may become a cholesteatoma. This was considered analogous to the epithelial molecules of cancroid formations.

Finally, we have to mention the possibility that a cholesteatoma may develop solely and only in the auditory canal in consequence of some foreign substance lodged there, or more frequently by chronic irritation caused by impacted cerumen which forms the nucleus of a cholesteatoma; or it may develop as the result of a chronic purulent inflammation which wears away the periosteum and osseous frame-work of the bony canal and the osseous frame of the membrana tympani, thus escaping into the middle ear. The reason for this origin is, in my estimation, to be found in the dual vegetation of a cholesteatoma of the auditory canal. We see first a cholesteatoma which forms in the meatus, and which, for the sake of conformity, we must

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regard as a cylindrical body, a concentrical lamettated growth which grows outward with persistence, and exerts an ever-increasing pressure upon the osseous framework until it is ruptured. Then again we have a growth which follows the cylinder longitudinally, and which generally results in a rupture into the tympanic cavity. This can readily follow when any body seeks to escape at the point of least relative resistance; the relatively frail osseous frame of the membrana tympani is just the part to give way under pressure.

These are the expressed opinions on the genesis of cholesteatoma up to the present time. If we weigh these hypothesis in the balance we may say that the most recent, that of Habermann, seems the most probable because, being based on anatomical and clinical facts, it approaches nearer to the truth, although there is still much waiting an explanation.

ORIGINAL CONTRIBUTION ON THE ANATOMY OF THE TEMPORAL BONE.

E. Zuckerkandl (*Monat. für Ohrenh.*, September, 1895). In the following lines a case is presented in which both sides of the squamous portion of the temporal bone are distinguished by peculiar formations. I begin with a description of the right os temporale, in which the anomaly shows itself in simpler form than on the other side. We see here, on the outer half of the meatus auditorius externus, and indeed just at the juncture of the posterior with the superior wall, a lacuna about as large as a hempseed, which puts the canal into communication with the recessus epitympanicus. Under this large lacuna we find a second smaller one, which also opens into the aforesaid recessus. From the large lacuna a deep, wide sinus runs out, which cuts through the lateral wall of the meatus auditorius externus. The region of the sinus is smooth, but tubercular. Both the lacunæ described belong to the class of congenital fissures of the external meatus, which I reported to this journal some years ago. While on the left side the real squama of the temporal bone preserves its normal condition, the right side has undergone the following changes: It has materially shrunken. The squama of the left side measures in the middle 32 *mm.*, over the zygomatic process 35 *mm.*, while the corresponding processes on the right side measure 14 to 19 *mm.* Further, the outline

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of the squama does not form a simple arch, but has a deep incision at the seat of the smaller lacuna, so that the squama becomes two parts, the anterior being the smaller, and the posterior the larger. Corresponding to the retraction of the squama, the frontal diameter of the right parietal bone is visibly increased. The right os parietale has at the point of retraction a circumference (semi-circular) of 138 *mm.*, the left parietal bone, at the same point, only that of 120 *mm.* It is interesting to note that the retracted right squama of the temporal bone is cleft on the anterior smaller half into two laminæ; a median which, with the posterior squama, forms a corpus, and a thicker, lateral one, which, simply resting on the median, forms with it the margin of a narrow fissure; which, evidently not in a macerated condition, like the suture, holds connective tissue. The designated lamina cannot be wholly lifted from the primary bone because it has grown fast to the root of the mastoid process, and still deeper to the horizontal layer of the squama. When it is free, its margin is sometimes (partly?) smooth, partly dentated. The tuberculum articulare posticum[2] is similar, and also an attached part of the fossa mandibularis, the cortical layers of which are distinguished by serrated margins in the superior wall of the canal in the articular fossa only by a gap in the squama. A small mediar portion of this circumscribed bone is separated from the lateral by a short suture. From the anterior marginal suture of the same, a sagittal joint overlaps the fossa mandibularis, which compared with the one on the other side is visibly smaller and appears flattened. This flattened part rests near the root of the mastoid, so that nothing can be seen of a tuberculum articulare anticum. Corresponding to this suppression, the right condyle of the inferior maxilla is smaller than the left. Behind the suture on the superior wall of the auditory canal, which rests on the margin of the tuberculum articulare posticum, we perceive two lacunæ, which open into the spongiosa of the superior wall of the canal, and which may be classified with the fissures in the canal on the other side. The mastoid process of the right temporal bone is divided in two. The posterior portion is normally united to the primary bone, the anterior portion forms

[2] Under the designation tuberculum articulare posticum is to be understood the process which originates between fossa mandibularis and os tympanicum and which varies greatly in size.

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an independent little bone. When the right temporal bone is observed from the cranial cavity, one only sees that the squamous portion is smaller than normal; of the surface anomalies—the imperfect divisions by sutures into several parts—nothing is perceived. From this we conclude that the dismemberment must be designated as incomplete, and restricted to the cortical layers of the squama. There can be no doubt that in this case we have to do with a congenital anomalous ossification, which can only be thus characterized: That the newly formed superficial layers do not sufficiently unite with the parts already there or that a particular bony process, like the mastoid, must be established for this anterior portion. The lacunæ, which pierce the superior walls of the meatus auditorius externus, testify to insufficient ossification.

This anomally was found on the skull of a 14 year old boy, who, we may judge from the appearance of the skull, had suffered from a caries of the pars basilaris ossis occipitis, the occipital condyle and the posterior of the splenoid bone. In consequence of this process, the synchrondrosis between the occipital and the sphenoidal formed too early.

ACUTE ACOUSTIC NEURASTHENIA.

Report of cases treated in 1893 and 1894 at Prof. Gottstein's private polyclinic for ear, nose and throat, by Dr. R. Kayser, Breslau. (*Monats. für Ohrenh.*, September, 1895.)

A cabinetmaker, 33 years of age, was suddenly taken ill on June 11, 1894, with a passing giddiness accompanied by tinnitus aurium, and has loss of hearing in the left ear. Early on the 15th of June a second heavier attack, with vomiting, was experienced, which did not yield until the afternoon of June 16. On the 18th of June, when the patient came under observation, moderate giddiness was present. At the same time, nystagmus exists. This is particularly marked when the glance is directed upward or to the right, which also increases the giddiness, while both are diminished by a glance to the left. Moderate depression of the membrana tympani on both sides; hearing considerably worse on the left. Whisper = 30 *cm.* Weber; upon the skull, Rinné; positive, perceptive duration of bone conduction increased. No improvement in either giddiness or hearing

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follows catheterization. Internal organs, as well as urine, in normal condition. Ophthalmoscopic examination conducted by an oculist reveals hyperemic optic nerves on both sides; field of vision normal, but somewhat contracted for color, besides some refractive anomalies. It might also be considered of causative import that the patient had smoked a strong cigar before the first attack. Upon the application of leeches to the left ear, there was a marked improvement of condition in a few days, particularly with reference to the giddiness. In about ten days the patient was able to resume work and withdrew from further observation.

AN OPERATION FOR ADENOID VEGETATIONS FOLLOWED BY SEVERE HEMORRHAGE.

(*Monat. für Ohrenh.*, September, 1895.) A boy, 6 years of age, otherwise healthy, was suffering from adenoid vegetations, with enlargement of the tonsils. As the child was unusually unruly, the operation was done under chloroform anesthesia; that is to say, he was given enough to put him beyond resistance. Both tonsils and the adenoid vegetations were then removed. There was no hemorrhage to speak of, and in about three-quarters of an hour the patient was taken home and put to bed. Late the same evening, about ten hours after the operation, I was called to the child, who was bleeding without cessation from nose and mouth. I found the boy extremely anemic, waxen in color, bleeding freely from the nose, also vomiting large clots of blood. By applications of ice, etc., the hemorrhage was finally arrested, and the boy's life, so seriously threatened, was saved. The next day I discovered in the upper part of the posterior pharyngeal wall, and projecting into the naso-pharynx, a firmly attached bit of mucous membrane. This was removed with the forceps.

The operation for the adenoid vegetations was done with a Gottstein's annular knife. It does not follow, however, that the severe hemorrhage was caused by the pressure brought to bear upon some sensitive vessel of the vault by the bit of mucous membrane left hanging. It often happens, just when an operation is done with a Gottstein annular knife, that small or large tissues (pieces?) remain attached to the vault. It is certainly necessary to remove such bits, and it may readily be done with

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a straight or curved forceps. Nevertheless, I have seen such bits remain without any recurrence of hemorrhage. It must result from peculiar accidental conditions.

ACUTE DEAFNESS IN ONE EAR FOLLOWING MUMPS.

(*Monat. für Ohrenh.*, September, 1895.) A boy, 14 years of age, was seized on the eighth day of illness from mumps with severe meningeal symptoms, headache, vomiting, slow pulse (pulsus tardus), unconsciousness, accompanied by deafness in one ear. In a few days all the symptoms, save the deafness and occasional tinnitus, disappeared. The membrana tympani was perfectly normal. Weber: upon the skull; bone conduction for the watch, absent; no recognition of tuning-fork by air conduction on the right, and only heard on the left through the mastoid process. Perceptive duration of bone conduction visibly reduced.

ASEPSIS IN OTOLOGY, RHINOLOGY AND LARYNGOLOGY.

Lermoyez and Helme (*Annales des mal. de l'or. et du Larynx*, June, 1895). The upper respiratory tract acts as a vestibule between the exterior and the interior of the organism. It is, therefore, not surprising that micro-organisms are met with in the normal condition. The bacteriological flora of these cavities has been studied by Netler, Chatellier, Zaufal, Fränkel, Gradenigo and Martha for the ear; Ryce, Freudenthal, J. Wright, etc., for the nose. The microbes are carried into these regions by the air, by food, and finally, by contact with the fingers and objects of use. The attempt has been made to calculate in what proportion the germs would be deposited in the nose by the simple act of normal respiration. With that object J. Wright made the following experiment. He examined the quantity of micro-organisms contained in 10 liters of the air of his laboratory and found 129 +. He then caused to pass through the nasal fossa an equivalent quantity of the air of his laboratory which he received at its exit from the nose. He analyzed this air and found no more than twenty-four bacteria for 10 liters. This experiment, though imperfect, gives us an idea of the great quantity of micro-organisms which the inspired air deposits in the upper respiratory passages. And this quantity

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is still increased by the abundant deposition of germs made by the fingers and food, the invasion is thus formidably incessant.

Under these repeated invasions the organisms would soon succumb did there not exist in these cavities themselves a force of resistence sufficient to annul their effects. It was easy to foresee that one would find in these regions, badly defended from their situation, the bactericide power that has been observed in other organs. The recent researches of Wurtz and Lermoyez have demonstrated the bactericide power of the nasal mucus.

Therefore, normally, the mucus serves to protect the mucous membrane. It is a first line of defense sufficing in ordinary conditions without calling upon the tissues any abnormal effort. But if the attack is more violent, if the number and virulence of the pathogenic assailants are increased, the forces of resistence are multiplied equally. Then intervene the cellular elements, the leucocytes, whose abundant diapedesis realizes immunity by phagocytosis. To the hyper-secretion of mucus succeeds the production of muco-pus, then of pus.

However, there is a limit to this natural immunity, and the barriers may be forced in two ways: (1) When the number of the invaders is so considerable that the natural defenses, calculated for an attack less complete, succumbs to the number (as in the case in rhinology, in inoculation by septic instruments); (2) when a wound makes a break in these defenses and gives a free entrance to the microbes.

Now, it seems at first sight, that these two conditions of general infection are so often realized by oto-rhinological maneuvers that accidents following operations should be legion. Happily it is not so; thanks, especially to the force of resistence of the secretions and of the tissues, these accidents are relatively rare. We say "relatively" since if these accidents occur, they are out of all proportion to the truly considerable number of operations which are practiced upon the parts. They exist, however, and we could easily demonstrate their gravity.

But by the side of those which are known how many of them are there that are not published. This is all the more reprehensible in that it is in some sort held by the public that the operations of specialists do not admit of any attendant accident. How must we think, however, of purulent otitis succeeding to ablation of adenoid vegetations? What can one say also of the

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transmission of syphilis by non-sterilized instruments? "Those who disregard the rules of asepsis are so much the more culpable that the means of disinfection are to-day more easy and numerous than ever."—Dupont.

It seems to us, therefore, that all these accidents could at least be avoided if special surgery adopted strictly the precautions used in general surgery. Up to the present this side of our art has been perhaps somewhat neglected, not that we have the unhappy preference of these practices; that is not what we wish to say, and the majority of us, on the contrary, strive our best to realize what we consider to be the ideal of preventive measures. But what prevents here their absolute realization, without which there is uncertainty and peril, is the *technique*. Now the application af aseptic measures is valuable only by the minutial of its details. One must omit nothing at any moment of the operation, small as it may be, under pain of incurring the reproach of making only a farce of antisepsis. And this is more dangerous than complete obstention would be because it gives a false feeling of security. Do you wish an example to corroborate our opinion? Do you believe that one will have done all that is necessary because he has dipped an ear speculum, charged with staphylococci, into an antiseptic solution? With Martha we respond hardily, no. Has not that author shown that ear speculæ taken at hazard after the customary cleaning, and even after they have lain some time in an antiseptic, retain all the different micro-organisms? And again, it is not always a question of the micro-coccus without spores dividing by fission. Those which are reproduced by spores are still much more difficult to destroy.

To resume, we would say that there are not two ways of understanding surgical interventions. As one could not conceive of a surgeon practicing an operation without profiting by aseptic methods, so the specialists themselves, in practicing surgery should equally apply the methods in current use in general surgery.

Therefore, in a specialty antisepsis is imposed, but still more asepsis. It is especially to the latter that we should have recourse. One must not forget that this special ground is rather unfavorable to antisepsis. The great sensibility of the mucous tissues of the nose, ear and pharynx permit prolonged contact only with very weak solutions. Again one must reckon, and

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it is a most important factor, with the intense absorption power of the mucous tissues.

The absorptive power of the mucous membrane of the tympanum is not less great than that of the nose. Mercurial and cocain poisoning has taken place through solutions introduced into the tympanum. For these reasons asepsis is superior to antisepsis.

However, asepsis is oftenest neglected because one fears to complicate still more a technique already complex enough in itself. This is an error. One can nearly reach perfection by simple methods. We have long studied this question; our work has aimed to popularize the means which we have employed to render this method practical and in some sort elementary.

One may divide the procedures which belong to our specialty into three categories: (1) The examinations; (2) the operations by natural means and by artificial means; these last, among which we will cite tracheotomy and mastoidotomy, belong to general surgery and call for the employment of ordinary procedures; (3) the dressings. We have, therefore, to consider how to regulate the method of examination. To use it we have seen that it needs only care and patience, and above all, conviction.

In general, four things have to be considered before reaching the solution of the problem of asepsis: (1) The physician; (2) the patient; (3) the instruments; (4) the dressings.

1. *Disinfection of the physician.* It is impossible and illusory. If one requires it one does not obtain it. Imagine, for example, an otologist receiving his patients in his office with his arms bare, in his blouse, the hands wet as though a laparotomy was to be performed. Now, it is in the office that the ordinary operations are practiced. These ordinary operations call for the strict application of the rules of asepsis, yet this latter, as one habitually understands it, is impossible; but if one wishes to apply it with the best will in the world all these precautions would become useless. At any instant, indeed, if the patient moves it is necessary to readjust the head conveniently. During this short maneuver the field of operation is no longer illuminated; it is necessary to move the head-mirror with the hand. Ten times, therefore, in the course of an operation the hands become soiled and it is necessary to

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wash them, surgically; ten times—an impossible thing, especially if one considers the loss of time, and the anxiety of the patient who waits cocainization, etc.

Happily, we are able to pass by the precautions in use in general surgery. It suffices to imitate the bacteriologist. The bacteriologist has not aseptic hands, only he does not touch with his hands the culture mediums, and he only arrives at this by the mediation of sterilized instruments. We have only to do likewise to prevent the introduction of germs into the operative field.

It is well understood that after having seen a patient one must always take care to wash the hands, to scrub them with soap, sublimat, etc., but only with a view to cleanse them of blood and mucosity; in a word—it is neatness, not asepsis. Therefore, the asepsis of the physician is not imposed habitually; it is always indispensible when it is necessary to introduce a finger directly into a natural cavity, for example, before practicing the rhino-pharyngeal touch for adenoid vegetations or before effecting intubation. In these cases the hands should be sterilized. *Apropos* of the rhino-pharyngeal touch, Lemoyez has shown the course to be pursued. And he has observed a case in a child, 5 years of age, where a simple examination of the naso-pharynx made by a student in his service who had neglected to sterilize his hands, caused to break out the same evening an acute purulent otitis which lasted a month, and in the course of which the trephining of the mastoid seemed a pressing necessity, made otherwise more remarkable in that never before had the child had the least otitic complication.

2. *Disinfection of the patient.* Here there are many reservations to be made, and in all cases one is confronted with numerous difficulties. Asepsis imposes itself where there is the smallest operation to be performed. The difficulties are not only numerous, but they vary according to each region.

For the canal the technique has been established by Zaufal. He soaps the canal with a brush, he rinses then with absolute alcohol, and finally pours into the ear a concentrated antiseptic solution of sublimat, for example, of 1 to 500. The procedure is perfect, it should be utilized every time that one approaches the tympanum.

And, indeed, if the middle ear does not contain pus it is sure to make it suppurate to place it in communication with an

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auditory canal naturally and constantly infected; and if the discharge of the otitis is purulent it is risking, causing this to pass into the chronic state in exposing it to the secondary staphylococcic infection which will come to it. Moreover, the repeated instillation of carbolated glycerin, 1 to 20, made in the canal several days before practicing paracentesis, or before the spontaneous rupture, is an excellent means of realizing this asepsis so indispensible to the canal.

Difficulties much greater impede the disinfection of the nose and naso-pharynx. It is the habit to be content with the common place douche of Weber. Its antiseptic value is easily subject to doubt. Two cases are presented.

1. Where resection of the nasal septum is indicated, for example, in a nasal fossa whose mucous membrane is healthy. In this case the previous antiseptization of the nose is useless; it is impossible to render the nose more aseptic than it is normally. In spite of the great quantity of germs deposited from the current of inspired air, a drop of mucus examined by the microscope shows only an insignificant number of micro-organisms, and sown in gelatin are almost never cultivated. One might say of the preoperative nasal irrigations prescribed that they constitute almost a contra-indilation since they sweep away the mucus and hinder the natural antisepsis which is performed in the nasal fossæ.

2. Again where one operates in a nasal fossa full of mucopus. Here nasal irrigation justifies itself, but one must demand of it only what it can give—mechanical cleansing, but not real asepsis, and this asepsis is unrealizable for three reasons: first, because the washing of the nose, whatever method is employed, only affects the inferior portions of the nasal fossa; it does not penetrate into the meatus, neither into the olfactory cleft, still less happily into the canals from the eye, ear or sinuses which open into the nose. Again, because, as Jarniko has demonstrated, the aqueous solutions do not come in contact with the microbes, protected by the stratum of mucus in which they lie, and consequently cannot destroy them. Finally, the time being necessarily only short in which the nasal fossa is bathed in an antiseptic liquid, this must, to have any serious effect, be so concentrated that the mucous membrane could not bear it. Moreover, we know since the works of Bumm on septic peritonitis that the strong antiseptic solutions only tend, contrary to what

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one expects of them, to favor the infection. For if they do not remain long enough in the nasal fossæ to destroy the microbes in them, they have the time to provoke necrosis of the epithelium, to annihilate its biological functions, to favor sloughing and thus open a door to infection.

We do not, however, systematically reject nasal irrigations, but we recognize in them only a limited antiseptic value. To the solutions principally employed for this purpose, to borated water whose bactericide power is in a manner equal to zero, to the weak solution of sublimat 1 to 10,000, so painful to the pituitary membrane, to carbolized water 1 to 200 which leads quickly enough to anosmia, we would prefer a solution of pheno-salyl 1 to 1,000; the nose bears it well and its antiseptic strength is under these conditions relatively great. By adding 6 grammes of chlorid of sodium to the liter to this solution:

Pheno-salyl	1 gramme.
Chlorid of sodium	6 "
Boiled water	1 liter.

One prevents the absorption and consequent necrosis of the nasal epithelium.

The least inefficient procedure to obtain a relative asepsis of the nose, however, seems to us to be insufflation of antiseptic powder such as aristol or iodol several days in advance; these have the advantage of stimulating the secretion of mucus and of destroying the microbes, in part directly and in part indirectly.

As to the antiseptic effect of ointments it seems to us to need to be established by a serious experimental demonstration. As recently, Ceppi has proved that certain antiseptics, such as carbolic acid, completely lose their bactericide power when they are mixed with a fatty body.

The same difficulties occur in the pharynx. It is easy to understand that all asepsis is naturally impracticable here.

To sum up preoperative asepsis of the upper respiratory tract is almost impossible, in fact, if one wishes to make it strictly. Perhaps the advantage of the powders over the irrigations resides in the fact that instead of sweeping away the mucus the powders augment the secretion. One must not, however, be contented with this natural solution of the question. We should, on the contrary, give all our attention to the two following

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points which we must still consider, that is, the sterilization of the instruments and the dressings.

3. *Sterilization of instruments.* Is it sufficient to summarily wipe the instrument which is withdrawn from the nose and plunge it in an instant into a sublimat or carbolic solution, etc.? No! If we take the *aurens*, the most of all the microbes that we encounter habitually, and if we put it in weak solutions of creolin, carbolic acid, etc., we find that all the current antiseptics have little action upon it. Passing through a flame, as advised by some, is only applicable to a very few instruments. And even in these Zaufal has observed that to sterilize a stylet infected by the pus of tuberculous otitis it is necessary to heat it to a red-white heat.

The method which we employ is the following: It is eclectic and varies with the nature of the instrument. These are of two sorts:

1. Metallic instruments—Speculæ, catheters, forceps, snares, etc.

2. Non-metallic instruments—Hard rubber catheters, bougies, brushes, mouth-pieces for the Politzer bag, etc.

For the first series we utilize sterilization *by heat.* For the second, *by cold.* We employ finally a particular procedure for mirrors, syringes, etc.

1. *The sterilization of metallic instruments.* First, brushing and careful cleansing. When the instrument is hollow the interior must receive great care. The catheters, snares, etc., should be sponged. The same preliminary precautions should be taken before using Bosworth's saw or electric trephines; each tooth should be cleaned. This done, what mode of sterilization is to be preferred?

Sterilization with the dry bath (bath of Ponpinel, of Mariand) is excellent when the operation is done at home either to remove adenoids or to trephine the mastoid. The instruments are sterilized in a metal box the evening before; but as it takes an hour to sterilize by this means, and then more than a half hour to cool the apparatus, the proceeding is impracticable for ordinary use. As one may have a number of patients, not to mention the clinics, it would require a series of Ponpinel's baths and an incalculable number of instruments. Moreover, a great inconvenience in this proceeding is the distempering of cutting instruments which occurs. Finally, if the regulator upon which

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one depends is not perfect, the temperature quickly reaches 200°, causing the complete loss of the temper of the instruments.

With the object of remedying this imperfection in the sterilization by bath, we have had the idea of employing sand baths, a means employed by chemists to obtain a more constant temperature.

A second method of sterilization consists in the use of steam, either, as Zaufal did, with the steam of running water or steam under pressure. The first of these methods is rapid enough, fifteen to twenty minutes suffices; this is still too long. Moreover, this proceeding is liable to a grave objection: that after sterilization there is deposited a decided layer of rust upon the instruments if they are not nickled. And even with those which are nickled, it happens very frequently that at certain points the coating is not complete, in this case there are spots of rust often difficult to remove.

When vapor under pressure is used, the autoclave is used. This means is without doubt very rapid, nevertheless it is known as a very complex apparatus of very delicate management. It requires constant surveillance, and this is hardly possible in the confusion of a clinic. Besides the real danger of using it, we must admit that the sterilization may be illusory if the assistant to whom falls the disinfecting, has not taken care to drive out all the air from the apparatus. Finally, the instruments are often spotted with rust.

The favorite sterilizer seems to us to be boiling water. The proceeding is more rapid, the most convenient, and the most perfect in practice. Any alkalin salt added to the water will prevent rust; the one generally used is carbonat of soda. Nothing in practice equals this method for simplicity and efficacy. It is sufficient to plunge the instruments at the moment when it begins to boil. Thanks to this solution of carbonat of soda at one per cent, the boiling point becomes higher than that of water (104.6° instead of 100°). At that temperature, in a few minutes, all the germs are destroyed, and that is the thing to consider. Finally, the last advantage of the alkalin solution, a very appreciable advantage, is that it dissolves the mucus which adheres to the instruments, and besides, by the occasional stirring up by the boiling, it assists the mechanical cleansing of the latter.

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According to Davidsohn and Ichimmelbusch, the spore of the anthrax bacillus is destroyed in two minutes. Therefore, five minutes boiling at the maximum, suffices to obtain complete sterilization; two or three seconds alone suffice for an instrument simply soiled by pus. Upon leaving the solution, the instruments which have been taken out by forceps should be plunged into a cold solution, which will suffice to maintain asepsis. The solution we employ is naphtholated water, 1 to 2,000, or carbolated water, 1 to 100. The instruments thus surgically cleansed can await without fear of contamination the time of using again.

Aluminum instruments cannot be sterilized in alkalin baths, as the latter dissolves them in warmth, separating the hydrogen. It is, therefore, a serious inconvenience to employ this metal in the construction of ear speculæ, etc.

The means that we have just indicated will serve equally well for edged instruments, since they bear boiling very well; unhappily, the mechanical stirring up incident to boiling may blunt their edge. To avoid this, one has only to wrap the blade in a little absorbent cotton.

But for the more delicate instruments such as paracentesis needles, one can simply use ordinary chloroform. In a large-mouthed bottle, one places a thick layer of cotton, well pressed down upon the bottom. Then fill the bottle with chloroform and, just before performing paracentesis, place the needle therein. When the disinfection of the canal and the cocain anesthesia has been attended to, the needle will be sterilized.

2. *Sterilization of non-metallic instruments.* This is a great question for specialists. Indeed, if one has used a mirror on a tuberculous patient, and if the mirror has not been rigorously asepticized, one risks inoculating tuberculosis. The same holds with syphilis in its two first stages. The sterilization of the mirrors should be pushed so much the further in that the microbes penetrate deeply into the interstices of their setting and there escape more easily the bactericide action.

Now, ordinary mirrors do not support boiling; in a few minutes they lose their brilliance and are covered with spots. This is because of the layer of air between the mounting and the glass, becoming heated at 100° and producing a gap here at the time of cooling; the alkalin liquid is sucked in here and put in contact with the back of the tin-foil, which is thus rapidly

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deteriorated. We may establish the rule that all mirrors exposed to either dry or moist heat are destined to rapid deterioration in consequence of the unequal co-efficient of dilatation of the backing and of the glass and the inevitable separation which comes from it.

We have therefore been forced to have recourse to the cold antiseptic solutions for mirrors.

These solutions serve, besides the mirrors, for objects in hard rubber, for the soft sounds of Weber-Liel and for bougies for the Eustachian tube.

What antiseptic agent should be employed? We have searched a long time, since the solution should fulfill certain conditions. First, it should be very active, without attacking the metal. Then, and this is a capital point in children, it should not be poisonous. We must bar out carbolic acid, whose 1 to 50 solution alone is efficacious; first because it has a very strong odor, of burning the mucous membrane violently, and finally of deteriorating the hard rubber instruments. It renders them rough and harsh. The same fault is found with lysol and creolin. Sublimat remains, but it is toxic and attacks the metal of mirors. We have chosen pheno-salyl in a solution with water of one per cent. This antiseptic has been discovered and well studied by Dr. de Christmas, of the Pasteur Institute. The composition is as follows:

Carbolic acid	9	grammes
Salicylic acid	1	"
Lactic acid	2	"
Menthol	0.10	centigrammes

Dr. Christmas has found that tuberculous sputa mixed with five times its volume of a two per cent solution is sterilized in fifteen minutes, and its inoculation into guinea pigs is inoffensive.

This agent has a very great bactericide action, it is not toxic and, finally, its odor is agreeable. Pheno-salyl well prepared, and this preparation requires a certain skill (heating the three acids together until liquified and then adding the menthol; the product is soluble in water in the proportion of seven per cent, and in all proportions of alcohol and glycerin—Bardy), should dissolve totally in water, without leaving free globules of raw carbolic acid. This solution has the advantage of being made extemporaneously cold without necessitating special precaution.

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The mouth-pieces, the catheters and the mirrors should be plunged into a cold alkalin solution, which dissolves the mucus. Then dried with cotton, which is immediately destroyed. Then plunge the instruments into a jar containing a one per cent solution of pheno-salyl. For greater precaution, one should leave them there much longer than Christmas recommends. Even forty-eight hours without damage. The only inconvenience with pheno-salyl is that it attacks steel after a time; it forms a salicylate of iron, which blunts the edges. This solution does not serve, therefore, to cool instruments after they leave the boiling water. Naphtha and carbolated water serve perfectly in this case. But pheno-salyl may be used to sterilize the cautery and other handles without fear of harm to the copper mountings. This is valuable, as nothing is more difficult than to disinfect the mountings of galvano-caustic instruments.

The Eustachian catheters may remain indefinitely in this solution. We keep them there permanently, stuck in a tripod holding a plate with numerous holes, enclosed in a jar filled with a solution of pheno-salyl. They are taken out at the moment of using and afterwards sponged and placed in another bottle containing a similar solution; they remain there several hours, being afterward returned to the aseptic catheter carrier.

The bougies for the dilatation of the Eustachian tube are bathed in the same liquid. To facilitate, we have had a rack constructed, with seven tubes. Six contain the celluloid bougies graduated from 1 to 6; the seventh, larger, receives the bougies which have been used, to prevent their being again used in the same operation.

The *disinfection of syringes* and other analogous instruments intended to wash the ear and the nose, require sometimes hot and sometimes cold sterilization, according to the character of the instrument.

We have had constructed an aseptic syringe whose piston is encased with mountain flax. The cylinder is very short, but large, that the syringe may remain easily managed, and containing sufficient liquid to conveniently wash the ear. Warm sterilization is used for this instrument. The syringe should be placed in a bath of carbonat of soda solution, 1 to 100, cold, after being completely filled with the same. Carry it then to the boiling point and maintain it there for five minutes. If the syringe is sterilized empty or if it is suddenly plunged into the boiling solution the glass cylinder will break.

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This sterilization could not be repeated at each dressing, therefore we take care that the syringe does not come in contact with the infected cavity; this is easily managed since the canula is replaced by a metallic tip to which is adapted a conical cap of soft rubber, which is changed for each patient, avoiding all traumatism. The injection over, the cap is withdrawn and placed in the pheno-salyl solution. The syringe is placed in a phial of naphtholated water, where it remains aseptic. It is sufficient to sterilize it after each consultation. Moreover, this continued immersion keeps the packing of the piston moist and in order.

For washing the nose we have had an apparatus constructed that we believe answers all the requirements of good asepsis.

This consists of a glass cylinder terminating superiorly by a tube which encloses a tampon of cotton; at its inferior portion, equally slender, is applied a rubber tube, to whose free extremity is fixed a nasal canula of glass. This is constanly plunged into the pheno-salyl solution of one per cent. The apparatus is affixed by means of tenons to a metallic tube supplied with a groove permitting thus the free play of the douche-vessel, that may descend or rise to the required height and be solidly fixed with the help of a pressure screw.

4. *Sterilization of dressings:*

1. Sterilization of the water—It is also necessary to have aseptic water at hand. The most practical process is boiling for twenty minutes, which is sufficient for ordinary practice, but to-day we employ two successive boilings of twenty minutes each.

2. Sterilization of cotton—For the nose and ears, one is daily called upon, either in the course of an operation, or afterward, to make use of tampons of absorbent cotton. How shall we sterilize it? We have an assistant roll small tampons into pear-shape. These tampons, placed in a closed large-mouthed bottle, are placed either in Lautenschläger's circulating vapor bath, which has the advantage of not requiring too much watching, or more simply into a sand bath. When the sterilization is obtained, it suffices to keep the bottles carefully corked; removing the tampons for use only with forceps duly sterilized.

But there are cases where one is obliged to use tampons mounted upon an applicator. Usually one uses an applicator upon which the cotton is rolled with fingers more or less clean.

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To remedy this inconvenience, we have conceived of utilizing the igneous properties of boric acid. Alcohol at ninety per cent is saturated with boric acid. When a tampon is required it is plunged into the alcohol thus prepared and ignited; at the moment when it begins to carbonize it is sterilized.

We must finally speak of the preparation of aseptic solutions of cocain. We dissolve the cocain, at the moment of using, in a carbolic acid solution of 1 to 200. We measure the cocain with little spoons holding exactly five centigrammes; adding to that quantity 5, 10, 20 drops of liquid to obtain extemporaneously a solution of 1 to 5, 1 to 10, or 1 to 20.

This may appear complicated and we acknowledge that our asepsis is as delicate as surgical asepsis; but it is imposed like the latter and it never occurs to a surgeon that these precautions are tiresome.

Nothing justifies better the necessity of the aseptic precautions that we are constrained to take than the statistical results made at our clinic during fifteen months.

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ABSTRACTS FROM FOREIGN CURRENT OTOLOGICAL LITERATURE.

By T. Melville Hardie, M. D.,
of Chicago.

PILOCARPIN IN DISEASES OF THE MIDDLE EAR AND LABYRINTH.

Schirmunsky (*Monats. für Ohrenheilk.*, February, 1895, *Journal of Laryngol.*, June, 1895) reaches the following conclusions: (1) It is only in recent affections of the labyrinth, from whatever cause they arise (syphilitic, traumatic, secondary), that we can expect beneficial results from subcutaneous injections of pilocarpin, and this is the more certain the earlier the treatment is commenced. (2) No good is effected by pilocarpin either by subcutaneous injections or by the introduction of pilocarpin into the tympanum in old-standing affections of the labyrinth, and in the so-called dry middle-ear catarrh where persistent changes have taken place. In dry middle-ear catarrh subcutaneous injections were employed in two cases, intra-tympanic injections in twenty-five cases, but with no better results than were obtained by the ordinary alkalin injections; subcutaneous injections were employed without benefit in four cases of secondary disease of the labyrinth. Improvement was obtained in two cases—one of traumatic effusion into the labyrinth, and the other from syphilis.

In a discussion on the treatment of nerve deafness in the Section of Otology of the British Medical Association, Dundas Grant (*Journal of Laryngol.*, September, 1895) reported that he had used pilocarpin with good effect in recent exudations and deafness accompanying mumps. It might be used with advantage in labyrinthine congestion and in early cases of acquired syphilis. It was contra-indicated in anemia and

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advanced tertiary disease. MacNaughton Jones and Barr had seen no benefit from its use, while Field stated that he certainly had had some good results from pilocarpin and believed that in selected cases treatment would prove satisfactory.

PROCEEDINGS OF THE INTERNATIONAL CONGRESS OF OTOLOGY.

At the International Congress of Otology held at Florence, September, 1895, Politzer discussed *Pathological Changes in the Labyrinth*. The paper was translated by Dundas Grant for the *Journal of Laryngol.*, November, 1895, and the reader is referred to that journal for the complete paper.

Our knowledge of the pathological changes occurring in the labyrinth dates scarcely further back than the second half of this century, because of the earlier imperfections of microscopic methods and because we have recorded only a very small number of anatomical demonstrations on individuals submitted to clinical observation during life.

The changes in the labyrinth comprise: (1) Hyperemia; (2) hemorrhagic extravasations into the labyrinth; (3) inflammations of the labyrinth, both primary and secondary, with their results.

Hyperemia. Of importance clinically because it may give rise to subjective noises, to vertigo and to disturbances of hearing. Eichler has demonstrated that the labyrinth possesses a complete vascular system of its own. It has, however, anastomotic relations with neighboring parts, especially the tympanic cavity. The special vascular system is the normal seat of hyperemia such as occurs in certain infectious forms of otitis, but especially in typhoid and diphtheritic scarlatina. Other causes of labyrinthine hyperemia are: (1) Cerebral tumors, which cause pressure on the venous channels of the brain, or by proliferating into the internal auditory meatus, the internal auditory artery and vein; (2) the influence of the nerves, especially the sympathetic; (3) acute and chronic inflammations of the tympanum.

Hemorrhagic extravasations. These are met with most frequently in infectious diseases, such as scarlatina, diphtheria, smallpox; in acute tuberculosis, chronic nephritis, diabetes, leukemia, and in circulatory troubles arising from organic affec-

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tions of the heart and lungs. They are found frequently in chronic suppurations of the tympanum. The anatomical basis of Menière's disease is wanting, except for the one case described by Menière; we must, therefore, speak only of Menière's group of cerebral symptoms. It has not yet been demonstrated that the labyrinthine symptoms which follow the administration of certain drugs (quinin, etc.,) are produced by hemorrhages into the labyrinth; our presumptions are based upon Kirchner's experiments on rabbits.

Inflammation of the labyrinth. Our information, as far as primary inflammations are concerned, applies only to their results. Ths pathological changes in secondary inflammations are the result of acute or chronic infectious diseases or of tympanic inflammations. The changes are seen chiefly in the lower parts of the cochlea. The anatomical changes produced as the result of infectious dieases arise either from the invasion of specific microbes, or from that of purulent matters in the labyrinth, causing inflammation of the capsule and membranous portions. This may produce connective tissue and terminate in ossification; then a necrosis with degeneration of the tissue brought about by capillary thromboses or by direct action of the virus. The special studies of Moos in diphtheria and measles are particularly valuable and convincing. Heller demonstrated that the deafness which results in cerebro-spinal meningitis was produced by a suppurative inflammation of the labyrinth. Politzer has pointed out the frequency of secondary affections resulting from chronic suppuration in the middle ear, either with or without appreciable lesion of the labyrinthine wall. Politzer has also demonstrated the variety produced by an obstacle, *e. g.*, cancer, in the internal auditory meatus, which compresses the blood vessels in that situation. In a preparation made from a man who died of leukemia there were: (1) A new formation of connective and osseous tissue in the tympanic scala of the cochlea; (2) complete invasion of the semi-circular canals by connective tissue; (3) the accumulation of lymphatic cells in the interior of these canals, in the vestibule and in the vestibular scala of the cochlea. In syphilis the best known changes are hyperostosis of the temporal bone, with narrowing of the labyrinthine cavities and of the internal auditory meatus produced by chronic syphilis; and a proliferation of the labyrinthine capsule, with narrowing of the fenestra

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ovalis, terminating in anchylosis of the stapes. When tuberculosis perforates the capsule the inflammation produces on the one hand necrosis of the tissues, and, on the other, proliferation of newly-formed connective tissue, which entirely fills up the spaces. To this list must be added the primary affection of the capsule described by Politzer at the Congress of Rome. The new osseous proliferations begin about the fenestra ovalis, causing anchylosis of the stapes, and in advanced cases penetrate into the labyrinth, notably into the scala tympani. In conclusion, Politzer alluded to the depression of the membrane of Reissner as the result of extra-labyrinthine pressure on the organ of Corti, first described by Steinbrügge.

Gellé read an exhaustive paper upon *general constitutional treatment in diseases of the ear* in which, among other subjects, he referred to acute diseases occurring in the course of the eruptive fevers and recommended careful treatment (irrigation, etc.,) of the nose and naso-pharynx. He expected something from the application of the serum treatment in these cases. The importance of intestinal antisepsis (calomel, salol) was urged. In acute otitis he usually gave quinin, but in influenza antipyrin. Great importance was attached to constitutional treatment in syphilis, tuberculosis, gout and diabetes. Hypnotism, though occasionally of value in slight cases of functional deafness, had never benefitted severe ones.

The results of intra-tympanic operations for deafness following suppurative otitis media was discussed by Avoledo. Improvement in audition followed extraction of the malleus and incus, with the addition of pilocarpin to favor absorption. Gellé contended that many cases were kept up by intra-mastoid suppuration and urged early complete operation upon the apophysis. Dundas Grant thought there were many simple operations (*e. g.*, section of a tight band running backwards from the short process of the malleus) of great value apart from the classical removal of the ossicles. Arslan, Ferreri, Delstanche and Délie favored caustics, chromic acid, nitrat of silver, chlorid of zinc and lactic acid (50%). Politzer said that he had never advocated pilocarpin excepting for labyrinthine disease. The frequency of intra-tympanic adhesions and bands such as those mentioned by Dundas Grant necessitated surgical interference, although the hearing was not always improved by

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removal of the ossicles. It was of great importance that the Siegel speculum be employed to test the degree of fixation of the various parts.

On internal treatment in cases of otitis interna. Gradenigo discussed the subject in his paper in a general fashion, but presented no new facts. For syphilitic cases he advised intramuscular injections of perchlorid of mercury. Cresswell Baber narrated a case in which deafness accompanying myxo-edema yielded to thyroid treatment. Dundas Grant emphasized the importance of recognizing the nerve-deafness due to extreme debility in which cases pilocarpin should be scrupulously avoided. Strychnin in large doses was valuable.

Liquid vaselin in the treatment of affections of the middle ear. Since C. Delstanche had used this treatment in acute cases he had performed paracentesis less frequently. Habermann uses up to 50 centigrammes at a time; twenty-two out of thirty cases were greatly improved, tinnitus relieved in eighteen, vertigo diminished in nine. The treatment was indicated in serous, not in sclerotic catarrh. He introduced liquid vaselin through a catheter by means of a well-fitting syringe, and followed this with the air douche. Dundas Grant used a Weber-Liel's intra-tympanic catheter so as forcibly to break down existing adhesions. While the patient should be spared all treatment in sclerosis there was a class intermediate between this and exudative otitis in which treatment of this sort was experimentally justifiable.

The treatment of intra-cranial abscesses following purulent disease of the middle ear. The subject was elaborately considered in a paper by Barr (Glasgow) who, however, omitted definite reference to the work of German otologists. The following conditions can be successfully dealt with: (1) Abscess in the cerebrum, especially in the temporo-sphenoidal lobe; (2) abscess in the cerebellum; (3) purulent formations at the base of the skull, either (*a*) between the bone and the dura mater (so-called extra-dural abscess), or (*b*) between the dura mater and the surface of the brain (sub-dural abscess); (4) infective thrombosis of the sigmoid sinus even when secondary foci may exist elsewhere.

In all of these conditions it is essential, as a preliminary operation, to explore the cavities of the middle ear by removing the outer wall of the antrum. With good reflected light the

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tegmen tympani et antri and the bony partition of the sigmoid groove are to be carefully scrutinized.

Modes of operating: In abscess, meningitis or septic thrombosis "follow up the path of invasion" by means of a globular rotating burr propelled by a dental engine. In this way the dura mater or lateral sinus need not be injured, although exposed. When working deep in the bone a sharp gouge is frequently useful.

Extra-dural abscess. During the last seven years thirty-nine cases have been reported operated upon and followed by recovery.

Septic thrombosis of sigmoid sinus. Extra-dural abscess in the situation of the sigmoid groove is generally associated with septic thrombosis of the sinus. If this exists the jugular veins may be ligated, or the freely exposed sinus slit up, the thrombus removed and the sinus stuffed with iodoform gauze. There are thirty-six recorded cases of successful operation.

Intra-dural abscess. If lepto-meningitis is present it is generally too diffused to permit thorough removal of the pus, and these are the least hopeful of all intra-cranial complications in ear disease, but thorough operation gives the patient a chance, sixteen successful cases being recorded.

Cerebral or cerebellar abscess. The diagnosis of an uncomplicated abscess in the temporo-sphenoidal lobe can be made with certainty. To deal efficiently with it the skull should be trephined above the ear in addition to the enlargement of the tegmen opening; in the case of the cerebellum the trephine opening should be made behind the sigmoid sinus.

Mixed cases of intra-cranial disease. Many cases are of a mixed character and exact diagnosis is difficult. If lepto-meningitis co-exist with abscess the symptoms of the brain abscess are marked, and Barr believes that the middle and posterior fossæ should be exposed and pus sought for. During the last seven years at least fifty-nine cases of cerebral abscess and seven cases of cerebellar abscess have been successfully treated. Many of these were complicated with septic thrombosis of the sigmoid sinus, some with meningitis. There have been in all, in seven years, at least 158 cases in which operations followed by complete recovery have been performed for the relief of the intra-cranial complications of purulent ear disease.

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In the discussion Brieger mentioned the lumbar puncture of the spinal canal for the detection of meningitis. Operation should be avoided if it existed. Goris disagreed and cited cases in which the meningitic symptoms were marked, while, after death, no diffuse meningitis was found. Gradenigo was strongly of the opinion that cerebral abscesses should be reached directly through the cranium and not through the tegmen tympani.

On the functional examination of the hearing power. Gradenigo described his apparatus. He has each tuning-fork mounted on a frame, and adapted to it an apparatus like a fork which compresses the blades. When released they expand with a definite amount of force, and, therefore, begin vibrating with a constant intensity. Four degrees of compression and four of initial intensity of tone can be produced. According to the degree required for the patient to hear it the hearing power could be measured sufficiently near for all practical purposes and the amount very simply expressed in numbers. Dundas Grant suggested that the appliance be so regulated that normally the fork should be heard at a definite distance. The distance at which the patient could hear might then be noted and the ratio obtained.

Local massage in the treatment of chronic eczema of the ear. Bronner described and praised the process. The vibrations may be produced by hand or motor. A thick silver probe, armed with absorbent cotton smeared with mercurial ointment being employed. The vibrations should be rapid, about 700 per minute, and continued for from one to five minutes. The treatment is repeated daily until the skin is red and swollen, when it is to be omitted for a few days. As a rule, six or seven sittings are employed. Daly (Pittsburg) used the following: Hydrarg. ammon-chlor., hydrarg. sub-chlor. āā gr. j; "cold cream" ʒi. To avoid failure it should not be applied to a dry skin.

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ABSTRACTS FROM CURRENT AMERICAN AND ENGLISH OTOLOGICAL LITERATURE.

By Leonard A. Dessar, M. D.,
of New York.

ACUTE SUPPURATION OF THE MIDDLE EAR.

Dr. S. S. Bishop (*Medical Standard*, December, 1895,) calls attention to the fact that boracic acid sometimes produces irritation and pain in aural cases. He reports a case of acute mastoiditis in which, after operation, the wound was dressed with finely powdered boracic acid. On the following morning patient stated that he had suffered much pain in the wound and attributed it to the medicine with which it had been packed. Upon removing the dressing and substituting aristol he enjoyed entire relief from pain. At the next dressing, however, the author returned to the boracic acid without mentioning the change, intending to satisfy himself whether it was the acid or something else that caused the trouble. The next morning came the same report of a bad night, pain and sleeplessness. Several times he alternated between these two remedies until it was conclusively demonstrated that there are persons highly susceptible to boracic acid, as well as to iodoform. This experience led him to the use of aristol in acute suppurative inflammation of the middle ear, and after extensive use he has come to depend upon it almost exclusively, considering it the best cicatrizant at our command.

INTRA-TYMPANIC DISEASE.

Dr. Joseph E. Willetts (*Pittsburg Medical Review*, July, 1895,) in an exceedingly instructive article points out the impracticability of massage as a routine treatment in otitis

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media catarrhalis chronica. This form of otitis might be said to assume a chronic character from the beginning, and the impairment of hearing is often so slight that the patient neglects to seek advice until the morbid changes have done irreparable damage. On examination the short process of the malleus is prominent; the long process and the membrana tympani retracted with light streak diminished, or wanting entirely; and later in the disease varying degrees of opacity of the membrane. The retraction of the drum in these cases is usually attributed to external atmospheric pressures, the Eustachian tube being occluded and the residual air absorbed. According to the author, there is a more important factor in the retraction of the drum, and that is the intra-tympanic muscles. The retraction of the drum which occurs during the first attack of naso-pharyngitis with its contingent hyperemia of the Eustachian tube causing its temporary occlusion, must resume its normal position as soon as the Eustachian tube again becomes patulous which occurs in a very few days. It is only after repeated attacks of "cold in the head" that the patient finally imagines that he cannot hear as well as formerly. The atmospheric pressure alone is not sufficient, or rather has not existed long enough to account for the drum's final retracted and sclerosed condition in these cases. The fact that the drum does not undergo these changes in its normal position is, more than likely, due to the early disorganization of the stapedius muscle which permits the uncontrolled action of the tensor tympani to hold the drum in this retracted position, until further inflammation and infiltration finally firmly fix it. The anatomical relation of the stapedius shows this to be possible. The fact that it completely fills the bony canal and is devoid of a sheath or connective tissue covering, is conducive to its early disorganization. Being in direct touch with the periosteum any inflammation of this canal would interfere with its nutrition and lead to its speedy destruction, this result being hastened by the pressure incident to the periostitis. After this has occurred the equilibrium between it and the tensor tympani is lost, the membrane is retracted, and the stapes pushed into the foramen ovale. The tensor tympani, though exposed to the same inflammatory process, is differently affected. Being covered with a sheath of connective tissue it is not so liable to suffer from the pressure. The inflammation

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assumes the character of a cellulitis, and the vitality of the muscle escapes the deleterious influence to which the stapedius is subjected.

When disorganization of the stapedius has occured Politzeration is not only beneficial, but contra-indicated, as any effective massage would only strengthen the offending muscle, and increase its action. In the latter stages, where the drum is retracted and sclerosed, with stiffened or anchylosed ossicles, Politzeration is too feeble for massage and is practically useless in ear affections, except for intra-tympanic injections, or as an aid in diagnosis. The author also condemns the use of the modern pneumophono instruments for the production of aural massage, and also the vibrometer which he regards as useless, only causing a disturbance of intra-labyrinthal fluids and interfering with normal sound conduction. The treatment suggested by him in the earlier stages is the one in vogue at present, intra-tympanic injections, and in the later stages in which we have sclerosis, anchylosis, etc., ossiculectomy, in his opinion, has a future.

AURAL TUBERCULOSIS.

In the treatment of this affection Dr. S. F. Snow (*Buffalo Medical and Surgical Journal*, December, 1895,) recommends thorough cleansing and careful applications of a forty to eighty per cent lactic acid solution on a probe, and such constitutional remedies as are prescribed for the general tubercular condition that is usually present. He also extols the value of the Adirondack forests as a winter health resort, and points out that in that region we have a natural, all-the-year-round sanitarium for consumptives.

PAINFUL DRESSING AFTER MASTOID OPERATION UNDER HYPNOTIC SUGGESTION.

Dr. F. C. Todd (*Journal of the Am. Med. Ass'n.*, January 4, 1896,) reports an interesting case demonstrating Moll's statement that disobedient people, when hypnotized, are often the easiest to manage. The patient, a girl, 10 years of age, had suffered from chronic middle ear suppuration for three years, complicated by a suppurating mastoiditis on either side which had been discharging through large ragged fistulæ. The child

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was very fretful and impatient, and the family physician had been unable to exert any control over her. A mastoid operation was performed under chloroform, but at the first dressing two days later, extreme difficulty was experienced in keeping the patient sufficiently quiet to permit of the necessary manipulation owing to her violent struggling. The author, therefore, resorted to hypnotic suggestion with the result of rendering her perfectly obedient, and at the subsequent dressing, although she complained of considerable pain, it was not found necessary to repeat this procedure.

CEREBRAL DISEASE FOLLOWING OTITIS MEDIA.

Dr. H. L. Swain (*Yale Medical Journal*, January, 1896,) records a case of suppurative otitis media in a man, 22 years of age, terminating in death from basilar meningitis. The remarkable features of this case are: That an examination on his first visit revealed only comparatively slight evidences; that the meningitis was unattended with marked facial paralysis and existed for a considerable time before its fatal termination; and finally the rare mode of invasion of the anterior of the skull through the cochlea and internal auditory meatus as disclosed at the autopsy.

PNEUMATIC MASSAGE BY FINGER TIPS IN CATARRHAL DEAFNESS.

Dr. Randall (*Philadelphia Polyclinic*, *Omaha Clinic*, December, 1895,) states that for ten years he has been convinced of the value of this procedure in cases of catarrhal deafness. He teaches the patient to place the palmar surface of the finger (the middle finger is best) upon the tragus, reaching so far back that when the tragus is drawn strongly forward the finger can just be slipped into the meatus without having the nail scratch the back margin. Giving the finger only such play as does not lose the closure of the meatus, the patient can easily exercise decided alternations of pressure and suction, the latter especially.

PREVENTABLE DEAFNESS AND ITS INFLUENCE ON SUCCESS.

In a paper on this subject Dr. J. G. H. Nichols (*Journal of the Am. Med. Ass'n.*, December 14, 1895,) discusses the

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question whether the State, through a properly qualified medical officer of the school board, should not insist on the early detection of deafness and remedying of this, as well as other kinds of disease, as being an important factor in the after-success of the child, and consequently in its effect on the general welfare of the community. He recommends a scheme consisting of the following essential points:

1. The appointment in every school district, by the school board, of a properly qualified medical man whose duty it should be to attend on the registration days at school and examine all the children presenting themselves for the first time, as to their vision, hearing, condition of nose and throat, freedom from contagious disease and habits of cleanliness. He should make a record of the same in the school register, and should any disease be found, should notify the parents, on a proper blank, of its existence and the need of treatment.

2. During each school year he should examine every child in his district in the same manner and should keep a record of the same, and note if his recommendations have been complied with.

The medical examiner should supervise the heating, lighting and ventilation of the school rooms, and should have power to enforce his recommendations. He should, at stated intervals during the year, give instructions to the pupils, and by circular letter to the parents in regard to the care of the eye, ear, nose and throat, and general hygiene.

THE TREATMENT OF ACUTE INFLAMMATON OF THE MIDDLE EAR AND MASTOID.

Dr. E. B. Dench (*American Medico-Surgical Bulletin*, November 15, 1895) read an interesting paper on this subject before the Mississippi Valley Association, from which the following practical points are abstracted: At the inception of acute middle-ear inflammation he recommends one to two ounces of blood should be withdrawn by the wet cup or by natural leeches—preferably the former. This affords temporary relief of pain and may abort the inflammatory process. Still further relief may be afforded by application of dry heat by means of a hot-water bag. No oleaginous material to be introduced into the meatus. Even irrigation with warm water is

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contra-indicated in the early stages. A single full dose of morphin or of one of the preparations of opium administered at this time relieves pain, secures rest and renders the other measures more efficacious. This treatment is indicated only in the early stages, and if the pain returns no effort should be made to relieve it by the internal administration of drugs. If in acute catarrhal otitis the middle ear is gradually filled with seromucus, which forces the drum membrane outward and threatens the integrity of the septum, the tension should be relieved before the pressure is sufficient to cause rupture. If the inflammatory process has ceased, as evidenced by the absence of pain, and the tension is not excessive, we may hope to cause an absorption of the effusion by the use of the catheter, or, in children, by inflation with the Politzer bag, and thus effect a cure without surgical interference. It is never wise, however, to await spontaneous rupture, because such a perforation, being the result of local necrosis, is never repaired completely, and the thin cicatrix resulting may be the cause of impaired hearing in later years. On the other hand, if an incision be made there is no local necrosis and healing follows in a short time without formation of cicatricial tissue.

In acute inflammation of the tympanic vault surgical interference is demanded much more promptly. This form of middle-ear inflammation is essentially a cellulitis, since the infection is in the reduplications of mucous membrane with which the vault is lined. Owing to the intimate connection between the tympanic vault and the mastoid antrum, and to the virulence of the infection, it is never wise to postpone free incision until fluid be present. The object of such an incision is to relieve the tension in the engorged tissues and to prevent local necrosis. The procedure suggested by Blake, with slight modifications, is followed.

After incision in acute catarrhal or purulent inflammation, simple cleansing is all that is required to effect a cure. The external auditory meatus must be kept free from fluid, and especially from fluids which either are toxic themselves or may become so through aerial infection. For this purpose the author prefers irrigation of the meatus every two to four hours with half a pint of a warm solution of bichlorid of mercury of the strength of 1:5,000, the fluid to be injected with an ordinary hard rubber ear syringe. If the discharge is very

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profuse a small pledget of cotton should be worn in the incisura intertragica. As the discharge diminishes in quantity, the frequency of irrigation is reduced, and when the edges of the incision have become adherent, if all evidences of inflammation have disappeared, a little boric acid is dusted over the walls of the canal and the surface of the membrane. While there is any appreciable amount of discharge no powders should be used. Instillation of astringent solutions is never necessary in cases seen before spontaneous rupture of the membrana has occurred, and seldom in cases of acute catarrhal otitis in which the drum membrane had ruptured spontaneously and which are seen before the vault of the tympanum has become involved secondarily. Ear drops, to be used by the patient at home are of little value, except as a means of securing an aseptic condition.

The author regards temperature as of but little importance in the diagnosis of cases where the inflammatory process threatens the mastoid, but has found that tenderness or pressure over the mastoid is an almost certain sign of mastoid involvement. Another sign of great importance is the sinking of the upper and posterior walls of the meatus, narrowing the deep canal and obscuring the upper and posterior part of the drum membrane. The first indication, if the mastoid is involved, is to secure the best possible drainage of the tympanic vault, through the external meatus, by an incision through the membrana flaccida, from the short process of the malleus backward to the tympanic ring, and from this point outward through the soft tissues covering the superior wall of the canal for a distance of one-quarter to one-half an inch. Rest in bed, restricted diet, irrigation of the canal with bichlorid solution every two to four hours, and local application of cold are indicated. The length of time during which cold applications should be continued in the hope of aborting the inflammation should not exceed forty-eight hours, and usually thirty-six hours are sufficient. If the local tenderness returns, or if it has failed to disappear after the employment of cold applications, in the manner above described, the mastoid should at once be thoroughly opened. Nothing is gained by using leeches or the wet cup behind the ear, or by the application of blisters to the mastoid, or by making the so-called "Wilde's incision." Such measures may temporarily check the process, or rather may mask the symptoms, while the destruction of the osseous tissue still goes on. The mastoid

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operation, if properly conducted, is not attended with any risk to the patient, and if Wilde's incision seems indicated, the operator should go a step further and open the bony cells.

THE ETIOLOGY OF TINNITUS AURIUM.

After enumerating the various causes of tinnitus, Dr. S. O. Richey (*Journal of the Am. Med. Ass'n*, January 4, 1896) states that ankylosis of the ossicula auditus, especially of the foot-plate of the stapes in the foramen ovale, is an active factor in the etiology of tinnitus. Ankylosis of the other articulations, while difficult to relieve, does not offer the formidable embarrassment which attends ankylosis of the foot-plate of the stapes, because they can be reached through the Eustachian tube by means of vapor of iodin, and the joints rendered movable by this means and by the tapottement inseparable from inflation of the tympanum. The author believes that excision of the drum membrane with the incus and malleus does not reach the seat of the trouble. On the other hand, the results of stapedectomy were disappointing, owing to the fact that instead of detaching the stapes in its entirety, the crura were usually broken off, leaving the foot-plate still engaged. Even if the foot-plate had always been removed with entire relief, the improved condition could not last, unless such treatment were adopted as would stay the further progress of the cause, which has been shown by Politzer to be a "circumscribed primary affection of the labyrinthine capsule, exhibiting, post-mortem, in the region of the niche of the oval window, more or less sharp bony protuberances, covered mostly with normal mucosa, the neoplastic bony tissue gradually pushing aside the normal bone and attacking the oval window and stapes producing ankylosis of the stapes. The round window may also be very much contracted."

In conformity with Politzer's view that the hyperostosis is due to gout (inclusive of all causes of intra-cranial circulatory disturbances) Richey has employed with some success iodin vapor as a topical application in these cases together with the constitutional administration of the drug, diet baths and clothing.

STAPEDECTOMY AND MOBILIZATION OF THE STAPES FOR THE IMPROVEMENT OF THE HEARING IN DEAFNESS.

Dr. E. B. Gleason (*Atlantic Medical Weekly*, November 23, 1895) relates the case of a lady, 30 years of age, in which he

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performed stapedectomy. Although before the operation he had determined that the stapes of her left ear was fixed almost immovably in the pelvis of the oval window, and that at least part of the labyrinth comprising the first turn of the cochlea was probably atropied. The diagnosis was made in part by Rinné's method, and confirmed by a history of long continued middle-ear catarrh. Other tests made with Galton's whistle, tuning-forks and the piano demonstrated that her deafness was the result of disease of the labyrinth as well as that of the middle ear. By Gelle's test it was found that the stapes of the left ear, at least, was immovable, and that of her right ear (the better one) nearly so, by any pressure that could be brought to bear upon it by condensing the air in the auditory canal by means of Politzer's bag. An exploratory incision was made under ether narcosis, involving the larger part of the posterior circumference of the drum-head, and the flap was turned forward over the malleus handle. The incision was followed by little or no bleeding, and that portion of the intra-tympanic membrane that was visible was yellow, bloodless, and almost tendon-like in appearance. The incudo-stapedical articulation was nearly hidden behind the annulus tympanicus, and the stapedius tendon was cut in the hope of being able to draw the articulation forward into better view. The stapes was, however, almost immovable. The incudo-stapedial articulation was then severed and an attempt was again made to mobilize the stapes, considerable traction being made for this purpose, outward and forward. After the operation the patient suffered much from nausea and dizziness, which subsided in the course of a week. Six months later her hearing had improved to the extent that she was able to hear all the notes of her piano. While in this case a general anesthetic was considered necessary, the author believes that it is usually best to operate in catarrhal cases under cocain anesthesia, in order to be able to estimate, at each stage of the operation, the effect that has been produced upon the hearing, or the amount of relief that has been attained as regards tinnitus. One of the best results that he has obtained from an intra-tympanic operation on a catarrhal case was done under cocain anesthesia. After incision of the posterior periphery of the drum-head, the instillation of a few drops of a four per cent solution of cocain rendered subsequent procedures almost painless. The hearing was tested after the incision and

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found not improved. The stapes was then moved by means of a cotton-tipped probe, a procedure that rendered the patient somewhat dizzy and faint, but produced no improvement in his hearing. As soon, however, as the incudo-stapedial articulation was severed, the hearing, which before the operation was very imperfect, became nearly normal and has remained nearly normal for speech for the past six months which have followed the operation.

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A CASE OF PONTILE LESION WITH OCULAR SYMPTOMS.

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OF recent years our knowledge of the anatomy and physiology of the pons and oblongatas has been increased to such an extent, that the localization of lesions in that portion of the nervous system has become almost as definite as it is in the cerebrum. Usually the condition of alternate hemiplegia is the most notable feature, that is, paralysis or paresis of the extremities on one side of the body, with consentaneous involvement of some of the cranial nerves on the other. Change in the sensation of the parts affected may or may not be a symptom, according as the lesion is situated in one part or another. The case about to be reported, is a very good illustration of a, to a great extent, typical case of pontile lesion; and the involvement of so many cranial nerves makes it an especially interesting study from the standpoint of localization.

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Antonio L., male, cabinet maker, 35 years of age, native of Hungary, came to the clinic for nervous diseases of the Philadelphia Polyclinic, August, 1895, with the following history:

Family history is negative. The patient himself was always a healthy man and served in the Austrian army, during which service he contracted syphilis. Twelve years ago he was discharged from the army, and subsequently was confined to the hospital for six weeks, with an illness which caused swelling of the abdomen. He had no other sickness until March, 1895. On the first day of that month he attempted to rise from bed, and found himself unable to move the left arm or leg, or to speak plainly. This condition improved, so that in six weeks he walked about, using a cane for support, but he noticed that objects appeared double to him, and that it was necessary for him to twist his head to one side to see distinctly. He could open and close his eyelids without difficulty. The mouth was quite drawn to the left, and the right half of the lips seemed awkward in use. Hearing with the right ear was almost totally lost.

Present condition: The patient is a well-nourished, intelligent man, who does not complain of pain. His left arm and leg are quite paretic. Extension of the fingers of the left hand is almost impossible, and other movements of the left upper limb are performed with difficulty. Motion is almost completely lost in the left lower extremity. When walking is attempted the leg is partially lifted, then dragged along, not circumducted.

The right side of the face droops slightly, but the patient has fairly good control of all the facial muscles, save the orbicularis oris and the lavatores labii. Emotional control is well preserved; there are no "bursts of crying or laughing."

The external rectus muscle of the right eye is completely paralyzed. Movement of the right globe to the temporal side is impossible. There is no paralysis of consentaneous ocular movement of the left side, the muscles of that eye being unaffected. The head is inclined to the right, and an effort to look at objects causes a very great exaggeration of this position.

Tendon and muscle phenomena are increased on the paretic side. Electrical examination of the face gives degeneration reactions in the muscles about the mouth. Tactile, pain and thermic senses are normal everywhere on the body, excepting a portion of the right side of the head and face, where pain sense is abolished. Tactile and temperature senses in this area seem

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to be unimpaired, or else affected to so slight a degree that the impairment can not be proven.

Almost complete deafness is the condition of the right ear. This, the patient claims, has been only since the "stroke." Hearing has been impaired to a slight extent on the left side for many years. Tested with a watch: Right ear, contact, hearing; left ear, 26 *cm.*, hearing. Examination of the eyes gives no result other than the double vision already mentioned. Sense of smell appears to be preserved. Taste on the right side is completely lost, both anteriorly and posteriorly.

In a very recent article by Mills[1] the subject of the localization of the pontile lesions is very thoroughly discussed. In considering the anatomy of this portion of the nervous system he separates what is commonly called the pons varolii into two parts, and calls the ventral part the pons, in which are found chiefly fiber tracts and a few special nuclei. The dorsal part he denominates the preoblongata, and locates in it the nuclei of the cranial nerves, from the fourth to the twelfth. Caudad of these structures is the postoblongata, or, as it is better known, the medulla oblongata. By means of incisions, dorso-ventral and cephalo-caudal, he makes sections of the combined pons and preoblongata, which allow of very complete gross examintion and subsequent preparation for the microscope.

Taking a dorso-ventral section from the caudal third of the pons (Fig. I) we find that it is made up principally of two sets of transverse fibers, the superficial and the deep, and the pyramidal tracts. The superficial transverse fibers are on the ventral surface, and are mostly cerebellar fasciculi connect which portions of opposite halves of the cerebellum, and also parts of the lateral lobes of the cerebellum with opposite cerebral hemispheres.[2]

Dorsad of these fibers lie the pyramidal tracts, the great motor path from the cerebral cortex. In them, fibers of the cranial nerves continue, and the fasciculi for the arm

[1] Mills, Chas. K. Localization of Lesions in the Pons and Preoblongata, *Internat. Clinics*, Fifth Series, Vol. III, p. 150.

[2] Mills. *Op. cit.*, p. 156.

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and leg of the opposite side are found. The deep transverse fibers are still further dorsad, and are principally from the middle peduncle of the cerebellum. A large portion of them go to help form the trapezium or trapezoid body, in which structure lies the path of the cochlear branch of the auditory nerve.[3]

The fillet, which is the great sensory tract, the superior olive, the nuclei of the various cranial nerves, and other important structures, are all dorsad of those mentioned, in the pons and preoblongata.

In order to locate the lesion in the case under considera-

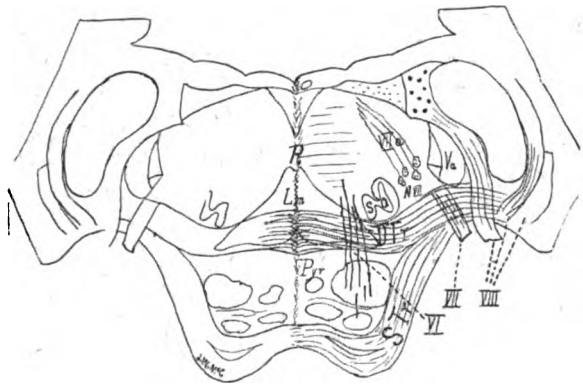


FIG. I.

Diagramatic representation of a dorso-ventral section of the pons and preoblongata, showing the relations of the different nerve roots; DTr., deep transverse fibers; Pyr., pyramidal tracts; STr., superficial transverse fibers; S. O., superior olive; Lm., lemniscus or fillet; R, raphe; Va., ascending root of fifth nerve; VI, VII, VIII, root fibers, etc, of the VI, VII, VIII, cranial nerves. (After Obersteiner).

tion, let us analyze the symptoms. We have a lesion involving the fifth, sixth, seventh and eighth cranial nerves of the right side, and the motor supply of the left arm and leg. Possible damage to the ninth nerve we will endeavor to eliminate. From the peculiar distribution of the paralysis, the so-called alternate or crossed hemiplegia, we believe that the seat of trouble is in the pons, and almost solely confined to the portion where the motor nerves are found.

[3] Obersteiner. H. *Anatomy of the Central Nervous Organs*, trans. by A. Hill, 1890, p. 225.

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By taking each cranial nerve separately we may be able to point out the divisions, or tracts of the pons which are involved.

Figure II shows the area of anesthesia on the right side of the face. This corresponds very closely with the cutaneous distribution of the third division of the trige-

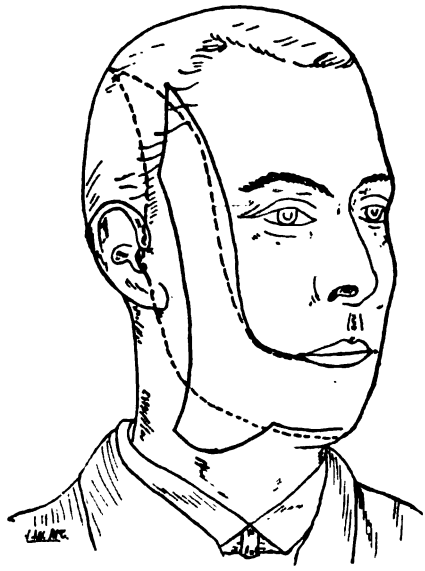


FIG. II.

Area of anesthesia of the right side of the face. Broken line marks the normal distribution of the third branch of the fifth nerve. Solid line shows the anesthetic area in the case under consideration.

minal nerve.[4] The muscles supplied by this nerve are not affected in any way, hence we can exclude the motor branches. The loss of taste sense on the right side suggests a subject for discussion. Wood[5] and others are inclined to the belief that the function of taste is subserved by both the fifth and ninth nerves. Herter[6] says that the anterior two-thirds of the tongue is supplied for taste by the fifth nerve, the posterior one-third, and the palate, he thinks,

[4] Heiberg, Jacob. *Atlas of the Cutaneous Nerve Supply of the Human Body*, trans. by W. W. Wagstaffe, 1885.

[5] Wood, H. C. *Nervous Diseases and their Diagnosis*, 1892, p. 335.

[6] Herter, C. A. *Text-Book of Nervous Diseases by American Authors*, edited by F. A. Dercum, 1895, p. 805.

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derive taste fibers from the glosso-pharyngeal nerve, but the impressions are carried to the fifth nerve by connecting branches before reaching the root fibers of the ninth nerve. Ferguson[7] suggests that while the fifth and the ninth nerves carry nerve fibers of taste to the tongue and palate, their office as nerves of taste is doubtful, as they may carry fibers from the other nerves. Herter[8] speaks of recorded cases of loss of taste on one side of the tongue where the fifth nerve alone was involved in disease. Gowers[9] claims that taste has been abolished by a lesion affecting the root of the fifth nerve. Erb[10] corroborates this view.

Gowers[11] also refers to a case of disease of the trigeminal nerve in which the muscles of mastication were paralyzed, and the sense of taste was lost on the whole of the same side as the disease. There was no change in the cutaneous sensibility, hence he concludes that the paths for common sensation and taste are separate and distinct, with the latter closely associated with the motor path.

Recent researches by Reid, of Edinburgh, and others show that the muscles of the palate derive their motor supply from the spinal accessory nerve. This would give the palatine branches of the spheno-palatine ganglion the function of sensory nerves, perhaps, as taste nerves for the parts supplied by them.

In the case here reported, the complete loss of the sense of taste on the right side seems to be due to a lesion affecting the taste-path of the trigeminal nerve. The anesthetic area on the face proves that the nerve is involved to a certain extent. The absence of paralysis of the muscles supplied by the glosso-pharyngeal nerve gives a valid objection to the idea that this nerve is damaged in any part of its course. We may, therefore, reasonably suppose, that in

[7] Ferguson. *Medical News*, London, October 18, 1890.

[8] Herter, C. A. *The Diagnosis of Diseases of the Nervous System*, 1892, p. 52.

[9] Gowers, W. R. *Journal of Physiology*, 1881, Vol. III, p. 229.

[10] Erb, Wilhelm. *Neurolog. Centralb.*, 1882, p. 77 and 149.

[11] Gowers, W. H. *Manual of Diseases of the Nervous System*, second edition, Vol. II, 1893, p. 226.

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our case the taste-path of the fifth nerve is wholly destroyed, and the path for common sensation partially damaged.

The paralysis of the external rectus muscle of the eye, as present in this case, is generally regarded as rare. deSchweinitz[12] thinks that pure cases of it are uncommon, and that it must undoubtedly be a fascicular paralysis. Gowers[13] holds, that if in the case of a lesion of the pons the fibers of the sixth nerve are damaged away from its nucleus, the paralysis is of the external rectus muscle alone, and no deficiency of the internal rectus of the opposite side is observable. (Fig. III.)



FIG. III.

Case of pontile lesion. Paralysis of right external rectus muscle. Attempt of the patient to look far to the right.

If, in the present case, the paralysis was due to a lesion of the sixth nerve nucleus, we should find conjugate deviation, for fibers passing from this nucleus to the nucleus of

[12] deSchweinitz, G. E. *Text-Book of Nervous Diseases by American Authors*, edited by F. X. Dercum, 1895, p. 789.

[13] Gowers, W. R. *Op. cit.*, p. 188.

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the third nerve have been positively demonstrated by Bruce,[14] Ferrier,[15] Obersteiner[16] and others. In nuclear lesion also, we would likely find symptoms of involvement of other muscles of the right eye.

On account of the connection between the facial nucleus and that of the hypoglossal nerve, nuclear disease of the seventh nerve would cause paralysis of the transverse fibers of the tongue, thus giving deviation of the tongue to one side. Such a condition, however, is not present in this case, and the reactions of degeneration in the muscles, together with the marked improvement in the paralysis as originally observed, only strengthens the supposition that the disease in this case is beyond the nucleus, that is, in the root fibers of the seventh nerve.

The association of an auditory nerve condition with that of the other cranial nerves, certainly adds to the interest of our case. Most writers regard such a thing as either very rare or never occurring. Mills,[17] however, refers to it as a possible symptom. Herter[18] claims, that when deafness of sudden onset is found in conjunction with hemiplegia of the opposite side, the lesion most probably involves the nucleus of the eighth nerve. Considering, for a moment, the anatomy of the eighth nerve, we find that it has two roots known as the superficial or cochlear, and the deep or vestibular. Of these, the former is regarded as the true nerve of hearing;[19] the latter subserving the function of equilibration. The path of the cochlear nerve, in part at least, lies, as we have already mentioned, in the trapezium or trapezoid body which is made up principally of the deep transverse fibers of the pons.

The nuclei of the nerve (auditory) have indirect connection with the nuclei of other cranial nerves by way of the

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[14] Bruce, Alex. *Illustrations of the Nerve Tracts in the Mid and Hind Brains*, 1893.

[15] Ferrier, David. *Functions of the Brain*, second edition, p. 23.

[16] Obersteiner, H. *Op. cit.*, p 292.

[17] Mills. *Op. cit.*, p. 155.

[18] Herter, C. A. *Diagnosis of Diseases of the Nervous System*, p. 161.

[19] Obersteiner, H. *Op. cit.*, p. 303.

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superior olive,[20] which connection, gives a key to the phenomena of associated movements of the eyes and head.[21] There is no impairment of equilibrium, and no paralysis of associated movements, both of which would likely be found in nuclear disease, so that here again we must conclude on involvement of the root fibers rather than nucleus, only one root, however, being affected.

Returning to the anatomy of the pons and preoblongata, we find that the root fibers of the various nerves pursue complex and devious courses through those structures, twisting about themselves or other root fibers or nuclei, until finally they reach the point of exit. Motor fibers pass to the pyramidal tracts, therefore, a lesion in the pons causing motor paralysis or paresis will most likely be found involving this subdivision. The fifth nerve passes through the deep transverse fibers of the pons with the sensory portion most mesad. Through the deep transverse fibers also passes the cochlear branch of the auditory nerve.

The nourishing vessels of the pons are the medial, which go directly to the nuclei, and the radicular, which pass along the nerve roots and divide into two branches, one to continue with the nerves, the other to aid the medial in nourishing the nuclei. From the history of our case we suppose that the lesion was a hemorrhage, probably from one or many of the radicular arteries. The damage was limited to one side by the raphé, and extended in a lateral direction, being confined to the pyramidal tracts, and a portion of the deep transverse fibers by the walls formed by the latter and the superficial transverse fibers.

[20] Gowers. *Op. cit.*, p. 187.

[21] Bennett, J. Hughes and Savill, Thos. *Brain*, July, 1889, Vol. XII.

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ABSTRACTS FROM CURRENT NEUROLOGICAL LITERATURE.

By Wendell Reber, M. D.,
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OCULIST AND AURIST TO THE CHILDREN'S HOME—LATE JUNIOR RESIDENT PHYSICIAN STATE HOSPITAL FOR INSANE, NORRISTOWN, PA.—FORMERLY CLINICAL ASSISTANT WILLS EYE HOSPITAL; ALSO TO THE EYE DEPARTMENTS OF THE PRESBYTERIAN AND ST. AGNES HOSPITALS, PHILADELPHIA, PA.

BRAIN TUMOR WITH OCULAR SYMPTOMS--AUTOPSY.

Fisher and Erdmann report the case of a woman with symptoms of cranial tumor. Late in 1890 she had influenza followed by long continued excruciating headache. In the spring of 1893 she had flashes of light before the eyes, more marked on the right side. By August, 1893, vision in right eye had sunk to light perception only. Vision in other eye continued good. By May, 1894, patient became entirely blind. She had also lost the sense of smell and had become deaf in the right ear. Ophthalmoscopic examination showed high neuro-retinitis in each eye.

Despite the fact that the head pain had, from the first, been sharpest over the right brow, that the right optic nerve had been first involved, that the sense of smell was first impaired on the right side, all pointing to a neoplasm under the right frontal lobe, the autopsy revealed a glioma in the right cerebellar hemisphere pressing on the pons, and including, but not destroying the cranial nerves.

This case, therefore, shows of how little value for localization the situation of cephalalgia (sometimes) is where the

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growth is deeply situated and slow in its development; and it also demonstrates how tolerant the cerebral structures are when injury to them is gradual. (*Journal Nerv. and Ment. Dis.*, September, 1895.)

A CASE OF INJURY TO THE LEFT ANGULAR GYRUS.

The following case history from the pen of Dr. Eugene Riggs is in direct contra-evidence to the theory of Henschen, who believes the visual cortical center to be located in the cuneus, and especially in the cells distributed about the calcarin fissure.

History: T. R., a guard at the Minnesota State Penitentary, was struck two blows upon the head with a machinist's hammer in the hands of an insane convict. He lost consciousness for a few seconds only, and came soon after to the hospital department. Examination discovered a depressed fracture an inch in length and one-eighth of an inch in depth in the left occipital region. No shock or symptoms of brain injury. Case was treated expectantly and recovery seemed uninterrupted. Four weeks after the injury he returned to work, but soon developed much headache and a sense of confusion while on duty in the shop, so much so, that eight weeks after the injury he was finally obliged to go home. He was able to go about and walked nearly a mile to consult the doctor every second or third day. Ten weeks after the injury he began to complain about his vision. It was at this time that Dr. Riggs first saw the case. He reports the visual fields and light response of both pupils to have been normal. Vision in right eye perfect. Vision in the left eye (corresponding to the side on which the head was injured) was very defective.

At four feet he could see the outlines of persons, but could not distinguish one from another. At four inches he could read good-sized print. Careful examination excluded hysteria as a cause.

Ten days later, operation. The dura was found discolored beneath the depression. As soon as the patient regained consciousness he could count fingers seven feet away with the affected eye.

Five hours after the operation the patient died suddenly. The necropsy showed injection of the dura and pia generally;

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softening of the greater portion of the angular gyrus and the supra-marginal convolution. The occipital lobe was carefully examined by Drs. Crafts and Riggs and "no lesion was present there." "This case seems noteworthy for the following reasons:

"1. Because of the absolute demonstration it gives that the right angular gyrus was the cause of the dimness of sight which was so remarkably improved after the operation.

"2. Because of the fact that the visual disturbance was homonymous instead of being crossed amblyopia which is, according to Gowers, the only recorded visual symptom resulting from lesion of the angular gyrus.

[With the two statements just quoted the reviewer cannot entirely agree. Authorities are sadly divided as to the seat of the visual center. Henschen, whose work has already become a classic, takes positive ground. After a consideration of his own cases, and a careful analysis of all cases of injury to the angular gyrus which have been sufficiently well observed and reported, he comes very decidedly to the conclusion that in such injuries the lesions struck so deeply into the medullary substance as to implicate the optic radiations.

As to the second of the author's conclusions there is much to be said: Was the left eye examined ophthalmoscopically? Was the condition of the globe, the nerve, the chiasm and the tract carefully investigated at the autopsy? Was there a microscopic section made of the left optic nerve to prove or disprove its integrity? These are pertinent questions and until they have been answered we can only say that the evidence is not all in, and we cannot, therefore, accept Dr. Riggs' conclusions as final. W. R.] (*Journal Nerv. and Ment. Dis.*, September, 1895.)

VERTIGO AND THE OCULAR MUSCLES.

Joseph Collins (*Journal of Nerv. and Ment. Dis.*, September, 1895) justly observes that one of the most valuable contributions to our knowledge of the puzzling symptom known as vertigo has recently come from the pen of Mendel, of Berlin. Mendel says that vertigo is almost invariably ushered in by ocular phenomena. In some cases the patient has the sensation of seeing the surrounding objects whirling around himself, and

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experiences a tendency to fall either in the same direction as the objects seemingly turn, or toward the other side; at other times, it seems to the patient as if the objects about him were approaching or receding, rising or falling.

There are four degrees of vertigo.

In the first and slightest form only ocular symptoms occur; in the second, there is a sensation of disturbed equilibrium; in the third, the equilibrium is really upset and the patient falls; in the fourth, these symptoms are accompanied by the above-mentioned secondary phenomena. The pathognomonic clinic sign of vertigo is disturbance of the equilibrium. Maintenance of the equilibrium is intimately connected with the sense of touch and sight. Whether hearing has anything to do with it is still a subject of controversy.

True vertigo is always associated with a disturbance in the musculature of the eyes. Vertigo is the first symptom complained of by patients who suffer from paralysis of the ocular muscles, whether this paralysis be nuclear or peripheral.

On the investigation of the causes of ocular vertigo with special reference to the supply of blood to the muscles of the eye, I have found that the nuclei which preside over the movements of the ocular muscles receive their branches from the posterior cerebral artery through fine terminal branches, not anastomosing with each other. The result of this arrangement is that the slightest disturbance in the central circulation immediately detracts from the supply of blood to the nuclei of the ocular muscles. Every pathologic process which develops a focus of disease in the brain will necessarily influence the cerebral circulation, and in consequence thereof be associated with vertigo, especially when this focus occupies a cerebral fossa.

In recapitulation, he says vertigo consists in a group of symptoms determined by a distubance in the sense of equilibrium due to defective function of the ocular muscles. This latter defect may be peripheral or cerebral in origin.

THE RELATION OF THE CEREBRUM AND CEREBELLUM TO EYE MOVEMENTS.

Dr. Risien Russell belives it is possible to demonstrate, even in the dog and cat, the existence of distinct foci in the cerebral cortex, standing in relation to each simple movement of the

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eyes. In the presence of normally balanced external ocular muscles, the constant result of stimulation of the anterior eye area was the movement of both eyes to the opposite side. Excluding this movement by dividing the external rectus of the opposite eye and the internal rectus of the eye on the side of the hemisphere that is stimulated, one is enabled to show the existence of a focus presiding over simple upward movement of the eyes. By then dividing the levators of the eye, a focus is determined which is related to simple downward movement. He believes that the true action of these centers in the cortex must be to initiate movement by their action on lower centers.

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COMMENTARY BY PROF. B. FRÄNKEL OF BERLIN, ON THE ANATOMICAL NOMENCLATURE.

TRANSLATED BY A. C. BERNAYS, M. D.,
OF ST. LOUIS.

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FROM THE ARCHIV FÜR LARYNGOLOGIE UND RHINOLOGIE, VOL. III, No. 1.

Since the year 1887 the Anatomical Association has been busy with the regulation and systematization of anatomical nomenclature. A commission has been appointed by the society for this purpose composed of the following members: Kölliker, O. Hertwig, His, Kollman, Merkel, Schwalbe, Toldt, Waldeyer, K. von Bardeleben, Braune, Henke, von Kupffer, von Mihalkovics, Rüdinger, Zuckerkandl, Kölliker being president, and W. Krause editor for the commission. Finally, a committee consisting of His, Krause and Waldeyer were entrusted with the duty of giving the entire work a uniform character. The Anatomical Association thereupon, at its meeting in Basel, resolved to adopt this nomenclature in the current year. The work had been done with the greatest diligence and the most admirable exactitude. In a supplementary volume of the anatomical department of the *Archiv. f. Anatomie und Physiologie*, a ratified "Anatomische Nomenclatur or Nomina Anatomica" is now before us, being the list of the names chosen by the commission of the Anatom-

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ical Society, together with an introduction and explanation by W. His. The names are in one language, namely, Latin. It is taken for granted that this nomenclature having been accepted by the German Anatomical Society will become the rule in all European countries. America may, perhaps, take its own course. Considering the enormous importance of this matter, I give in the following list those parts which concern our specialty.

FACIES.

NASUS.

Dorsum nasi
Apex nasi
Ala nasi

OS.

Sulcus nasolabialis
Philtrum
Labium superius
Labium inferius
Rima oris
Cavum oris
Lingua
Fauces
Bucca (Mala)[1]
Sulcus mentolabialis
Mentum
Labyrinthus (ossis ethmoidalis)
Cellulae ethmoidales
Infundibulum ethmoidale
Bulla ethmoidalis
Lamina papyracea
Foramina ethmoidalia
(Concha suprema)
Concha superior
Concha media
Processus uncinatus

CONCHA INFERIOR.

Processus lacrimalis
Processus maxillaris
Processus ethmoidalis

OS LACRIMALE.

Crista lacrimalis posterior

COLLUM.

Cervix
Larynx
Prominentia laryngea
Pharynx
Trachea
Oesophagus

OSSA FACIEI.

OS ETHMOIDALE.

Lamina cribrosa
Crista galli
Processus alaris
Lamina perpendicularis
Sulcus lacrimalis
Hamulus lacrimalis
Fossa sacci lacrimalis

OS NASALE.

Foramina nasalia
Sulcus ethmoidalis

VOMER.

Ala vomeris

MAXILLA.

Corpus maxillae

[1] Parentheses ( ) signify varieties; brackets [ ] additional names, explanatory names, double names and personal names; *italics* are autogenetic expressions.

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Facies anterior
Facies nasalis
Facies orbitalis
Facies pterygoidea
Sinus maxillaris
Margo infraorbitalis
Canalis sive sulcus infraorbitalis
Foramen infraorbitale
Sutura infraorbitalis
Fossa canina
(Fossa praenasalis)
Incisura nasalis
Tuber maxillare
Foramina alveolaria
Canales alveolares
Planum orbitale
Margo lacrimalis
Sulcus lacrimalis
Canalis lacrimalis
Crista conchalis
Processus frontalis
Crista lacrimalis anterior
Crista ethmoidalis
Processus zygomaticus
Processus palatinus
Crista nasalis
Spina nasalis anterior
Os incisivum
Canalis incisivus
Sutura incisiva
Spinae palatinae
Sulci palatini
Processus alveolaris
Limbus alveolaris
Alveoli
Septa interalveolaria
Juga alveolaria
Hiatus maxillaris
Foramen incisivum

OS PALATINUM.

Pars Perpendicularis
Facies nasalis
Facies maxillaris
Incisura sphenopalatina
Sulcus pterygopalatinus
Processus pyramidalis
Foramen palatinum majus
Foramina palatina minora
Canales palatini
Crista conchalis
Crista ethmoidalis
Processus orbitalis
Processus sphenoidalis
Pars horizontalis
Facies nasalis
Facies palatina
Spina nasalis posterior
Crista nasalis

MANDIBULA.

Corpus mandibulae
Protuberantia mentalis
Tuberculum mentale
Spina mentalis
Foramen mentale
Linea obliqua
Fossa digastrica
Linea mylohyoidea
Sulcus mylohyoideus
Juga alveolaria
Ramus mandibulae
Angulus mandibulae
(Tuberositas masseterica)
(Tuberositas pterygoidea)
Incisura mandibulae
Processus condyloideus
Capitulum [proc. condyl.] mandibulae
Collum [proc. condyloidei] mandibulae

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Fovea pterygoidea proc. condyloidei
Processus coronoideus
Foramen mandibulare
Lingula mandibulae
Canalis mandibulæ
Fovea sublingualis
(Fovea submaxillaris)
Pars alveolaris
Limbus alveolaris
Alveoli
Septa interalveolaria

OS HYOIDEUM.

Basis oss. hyoidei
Cornu minus
Cornu majus

CRANIUM.

Fossa pterygopalatina
Canalis pterygopalatinus
Foramen sphenopalatinum
Apertura piriformis
Cavum nasi
Septum nasi osseum
Meatus nasi communis
Meatus nasi superior
Meatus nasi medius
Meatus nasi inferior
Meatus nasopharyngeus
Choanae
Recessus spheno-ethmoidalis
Foramen jugulare
Fissura sphenopetrosa
Foramen lacerum
Palatum durum
(Torus palatinus)
Orbita
Aditus orbitae
Margo supraorbitalis
Margo infraorbitalis
Paries superior
Paries inferior
Paries lateralis
Paries medialis
Fissura orbitalis superior
Fissura orbitalis inferior

MYOLOGIA.

MUSCULI OSS. HYOIDEI.

M. digastricus
Venter anterior
Venter posterior
M. stylohyoideus
M. mylohyoideus
M. geniohyoideus

MUSCULI COLLI.

M. sternocleidomastoideus
M. sternohyoideus
M. omohyoideus
Venter superior
Venter inferior
M. Sternothyreoideus
M. thyreohyoideus
(M. levator glandulae thyreoideae)
Fascia colli
Fascia praevertebralis

SPLANCHNOLOGIA.

Tunica albuginea
Tunica fibrosa
Tunica adventitia
Membrana mucosa
Tunica propria mucosae
[Lamina] muscularis mucosae
Tela submucosa
Plica villosa
Mucus
Tunica muscularis
Tunica serosa
Tela subserosa
Plica serosa
Ligamentum serosum
Serum

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Bursa mucosa
Epithelium
Endothelium
Organon parenchymatosum
    Parenchyma
    Stroma
Glandula
Lobus
Lobulus
Glandula mucosa
Musculus viscerum

FAUCES.

Isthmus faucium
Velum palatinum
Uvula [palatina]
Arcus palatini
    Arcus glossopalatinus
    Arcus pharyngopalatinus
Plica salpingopalatina
Tonsilla palatina
    Fossulae tonsillares
Sinus tonsillaris
Plica triangularis
Fossa supratonsillaris

MUSCULI PALATI ET FAUCIUM.

M. levator veli palatini
M. tensor veli palatini
M. uvulae
M. glossopalatinus
M. pharyngopalatinus

PHARYNX.

Cavum pharyngis
Fornix pharyngis
Pars nasalis
Pars laryngea
Ostium pharyngeum tubae
    Labium anterius
    Labium posterius
    Torus tubarius
Plica salpingopharyngea
Recessus pharyngeus (Bursa pharyngea) [Rosenmuelleri]
Recessus piriformis
M. stylopharyngeus
Fascia pharyngobasilaris
Tunica mucosa
    Gl. pharyngeae
    Tonsilla pharyngea
    Fossulae tonsillares
Tela submucosa
Tunica muscularis pharyngis
Raphe pharyngis
Raphe pterygomandibularis
M. constrictor pharyngis superior
    M. pterygopharyngeus
    M. buccopharyngeus
    M. mylopharyngeus
    M. glossopharyngeus
    M. salpingopharyngeus
M. constrictor pharyngis medius
    M. chondropharyngeus
    M. ceratopharyngeus
M. constrictor pharyngis inferior
    M. thyreopharyngeus
    M. cricopharyngeus

ORGANA RESPIRATORIA.

CAVUM NASI.

Nares
Choanae
Septum nasi
    Septum cartilagineum
    Septum membranaceum
Vestibulum nasi
Limen nasi
Sulcus olfactorius
(Concha suprema) [Santorini]
Concha media
Concha superior
Concha inferior
Membrana mucosa nasi

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Plexus cavernosi concharum
Agger nasi
Recessus spheno ethmoidalis
Meatus nasi
Meatus nasi superior
Meatus nasi medius
Atrium meatus medii
Meatus nasi inferior
Meatus nasi communis
Meatus nasopharyngeus
Regio respiratoria
Regio olfactoria
Gl. olfactoriae
Sinus paranasales
Sinus maxillaria [Highmori]
Sinus sphenoidales
Sinus frontales
Cellulae ethmoidales
Bulla ethmoidalis
Infundibulum ethmoidale
Gl. nasales

NASUS EXTERNUS.

Basis nasi
Radix nasi
Dorsum nasi
Margo nasi
Apex nasi
Ala nasi
Septum mobile nasi
Cartilagines nasi
Cartilago septi nasi
Processus sphenoidalis septi cartilaginei
Cartilago nasi lateralis
Cartilago alaris major
Crus mediale
Crus laterale
Cartilagines alares minores
Cartilagines sesamoideae nasi
Organon vomeronasale [Jacobsoni]
Cartilago vomeronasalis [Jacobsoni]
(Ductus incisivus)

LARYNX.

Prominentia laryngea
Cartilagines laryngis
Cartilago thyreoidea
Lamina [dextra et sinistra]
Incisura thyreoidea superior
Incisura thyreoidea inferior
Tuberculum thyreoideum superius
Tuberculum thyreoideum inferius
(Linea obliqua)
Cornu superius
(Foramen thyreoideum)
Lig. hyothyreoideum laterale
Cartilago triticea
Lig. hyothyreoideum medium
Membrana hyothyreoidea
Cartilago cricoidea
Arcus [Cartilaginis cricoideae]
Lamina [Cartilaginis cricoideae]
Facies articularis arytaenoidea
Facies articularis threoidea
Articulatio cricothyreoidea
Capsula articularis cricothyreoidea
Ligg. ceratocricoidea lateralia
Lig. ceratocricoideum anterius
Ligg. ceratocricoidea posteriora
Lig. cricothyreoideum [medium]
Lig. cricotracheale
Cartilago arytaenoidea

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Facies articularis
Basis [cartilaginis arytaenoideae]
Crista arcuata
Colliculus
Fovea oblonga
Fovea triangularis
Apex [cartilaginis arytaenoideae]
Processus vocalis
Processus muscularis
Cartilago corniculata [Santorini]
Synchondrosis arycorniculata
Articulatio cricoarytaenoidea
Lig. cricopharyngeum
Lig. corniculopharyngeum
Lig. ventriculare
Lig. vocale
(Cartilago sesamoidea)
Lig. cricoarytaenoideum capsulare
Lig. cricoarytaenoideum posterius
Epiglottis
Petiolus epiglottidis
Tuberculum epiglotticum
Cartilago epiglottica
Lig. thyreoepiglotticum
Lig. hyoepiglotticum
Cartilago cuneiformis [Wrisbergi]
Tuberculum cuneiform [Wrisbergi]
Tuberculum corniculatum [Santorini]

MUSCULI LARYNGIS.

M. aryepiglotticus
M. cricothyreoideus
Pars recta
Pars obliqua
M. cricoarytaenoideus posterior (M. ceratocricoideus)
M. cricoarytaenoideus lateralis
M. ventricularis
M. vocalis
M. thyreoepiglotticus
M. thyreoarytaenoideus [externus]
M. arytaenoideus obliquus
M. arytaenoideus transversus

CAVUM LARYNGIS.

Vallecula epiglottica
Aditus laryngis
Vestibulum laryngis
Rima vestibuli
Labium vocale
Glottis
Rima glottidis
Pars intermembranacea
Pars intercartilaginea
Ventriculus laryngis [Morgagnii]
Appendix ventriculi laryngis
Tunica mucosa laryngis
Membrana elastica laryngis
Conus elasticus
Plica glossoepiglottica mediana
Plica glossoepiglottica lateralis
Plica aryepiglottica
Plica nervi laryngei
Plica ventricularis
Plica vocalis
Macula flava
Aditus glottidis inferior
Aditus glottidis superior
Incisura interarytaenoidea
Gl. laryngeae
Gl. laryngeae anteriores
Gl. laryngeae mediae
Gl. laryngeae posteriores
Noduli lymphatica laryngei

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I must confine myself to a simple reproduction of the above names. It is understood, of course, that in other parts of the work, for instance, in the department of Neurology or Angiology, matters of importance for us occur. I now quote from the "*Illustration of the Nomenclature*" the pertinent remarks verbatim.

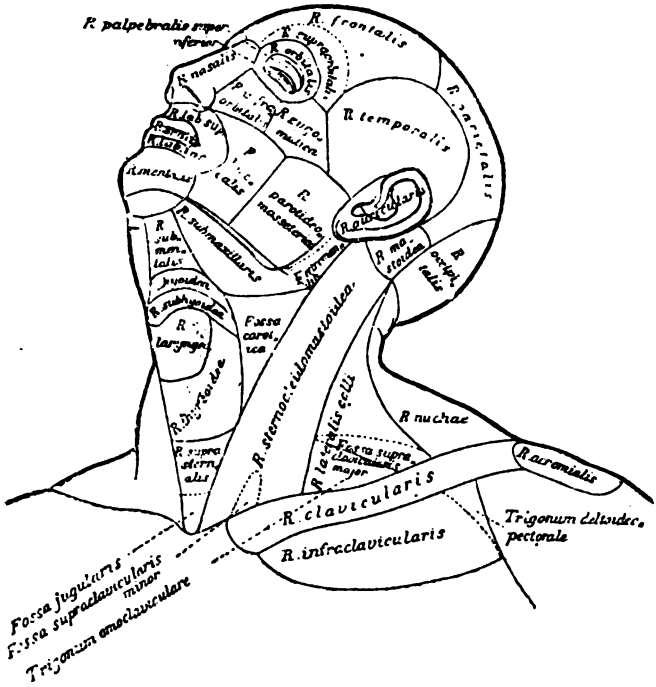


FIG. 1.

SPLANCHNOLOGY.

Under the name of *Tonsilla Lingualis*, on recommendation of Professor Waldeyer, all the folliculi at the base of the tongue are included.

"Sulcus terminalis, (*ductus lingualis*), ductus thyreoglossus, *sinus tonsillaris*, *plica triangularis*, *fossa supratonsillaris*. In considering these structures His refers to his *Anatomy of Human Embryos* (Vol. III, Leipzig, 1895). The body of the tongue and the root of the tongue are developed from two originally separated parts. The

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body is developed from the median elevation arising from the floor of the oral cavity (the tuberculum impar); the root of the tongue being developed from the two sides of the inner surface of the second and third pharyngeal arches. At the boundary of the two original organs a groove which is bent into the form of an angle is usually prominent during life, and is called the *sulcus terminalis linguae*. The posterior part of the groove ends in the foramen caecum, the anterior in front of the arcus palatoglossus. The line of the papillae vallatae lies from 5 to 8 *mm.* in front of the sulcus terminalis within the territory of the body of the tongue itself. Beginning at the foramen a duct ½ to 1 *cm.* in length, and over, reaches downwards in the direction of the hyoid bone, called the ductus lingualis. This duct is a remnant of the embryonal thyreoglossus duct which, at the end of the first month, extends from the pharynx to the middle anlage of the thyreoid body.

"The arcus glossopalatinus which is developed from two pharyngeal arches ends in a sharply pointed triangular fold of mucous membrane, called the *plica triangularis*. This fold is very narrow at the top but gradually becomes broader at its insertion in the tongue. Behind it, and to one side, we find a deep sinus in the fetus, called the *sinus tonsillaris*. From its base the entire tonsil is developed. According to the degree and extent of the adenoid growth the following possibilities may occur:

"1. The tonsil grows as a well-defined tuberosity within the sinus, and above it we find a very extensive *fossa supratonsillaris*.

"2. The tonsil almost completely fills the sinus up, but the supratonsillaris fossa may still be open. The plica triangularis lies upon the under portion of the tonsil and coalesces with it without, however, losing its sharp definition.

"3. Lymph follicles are developed on the free surface of the plica triangularis, and in extreme cases the boundary line between these follicles and the recesses of the tonsils is lost.

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"*Recessus pharyngeus* [Rosenmuelleri]. Merkel divides the recessus infundibuliformis [Rosenmuelleri] following Tourtual in his work on topographical anatomy (Vol. IV, page 416) from the lateral sulcus of the pharynx which he, after Tourtual, calls *sinus faucium lateralis*. The commission has refused to adopt the latter nomination. Its location behind the cartilaginous Eustachian tube is characteristic for Rosenmuelleri's recessus, whilst the sinus lateralis of Tourtual-Merkel lies further down behind the plica salpingopharyngea.

"In regard to the *bursa pharyngea* I refer to the description of Merkel (loc. cit., p. 413). In my opinion, the bursa pharyngea must be classified with those relief formations on the posterior pharyngeal wall which are produced by the Mm. recti capitis anteriores. In making a dissection of the unopened pharynx from behind we find three fold-like projections near its insertion at the base of the skull. The two lateral folds are the two Rosenmueller's pockets seen from without. Lying in the median plane, attached to the tuberculum pharyngeum of the occipital bone, there is a fold which seems to be pushed between the two insertions of the muscles, and corresponding to it, before the pharyngeal tonsil is largely developed, we find a median groove running down the dorsal sides of the pharyngeal wall. The pharyngeal tonsil, like the lingual tonsil in its early development, is formed by a system of folds and furrows which converge in a downward direction. The middle one of these folds leads to the bursa pharyngea, and thus Merkel interpreted the bursa as a median tonsillar cleft.

"*Nasus*. Those names which have been enumerated above, in excess of the demands of existing text-books, are taken largely from G. Schwalbe[2] and from H. Meyer. *Limen* nasi is the boundary line between the vestibulum of the nose surrounded by the cartilages, and the nasal cavity proper. Above the limen lies the *atrium meatus medii* (the carina of Merkel) into which the agger nasi, rudiment

[2] *Anatomie der Sinnesorgane*, Leipzig, 1887.

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of the anterior turbinated, extends from above. *Sulcus olfactorius* is the narrow cleft which leads upwards from the atrium between the agger nasi and the roof of the nasal cavity, and which extends towards the lamina cribrosa in the direction of the anterior part of the olfactory region. The *recessus spheno-ethmoidalis* is a gutter or sulcus which lies within the territory of the superior turbinated, and is, sometimes, covered by the concha suprema. *Meatus naso-pharyngeus* is that part of the nasal cavity which opens into the pharynx under the body of the sphenoid bone. *Meatus nasi communis* is that vertical cleft which extends to the summit of the nasal cavity next to the septum. *Processus sphenoidalis septi cartilaginei* (Kölliker) is a broad, tongue-shaped portion of the septal cartilage from 4 to 6 *mm.* in breadth which follows the lower margin of the lamina perpendicularis of the ethmoid, and is more or less thoroughly enclosed by the two marginal plates of the vomet.

"*Larynx.* In an article on 'Anatomy of the Vocal Cords' by Dr. B. Fränkel,[3] the historical development and changes of the names of those parts referring to the rima glottidis and the vocal cords is explained. The name *glottis* was coined by Galen, and it was applied by him to a bodily formation which he compares to the vibrating tongues of a musical instrument. Vesalius and Fabricius ab Aquapendente used the same name to designate the rima-glottidis or the lips of the glottis, namely, the vocal cords. The final naturalization of the ward *glottis* meaning, thereby, rima glottidis, and *ligamenta glottis* meaning the vocal cords, has been traced to Morgagni (1718). The expression *chorda vocalis* was introduced by Ferrier in 1744. The word vocal cord, *lig. vocale*, seems to have originated in the present century, and is found for the first time in Liscovius in 1814. The definition by Luschka of the word glottis, given in his monograph on the larynx (Tubingen, 1871, page 48), is very remarkable. Since the two vocal cords together form a tongue-work (Zungenwerk), (Glottis)

[3] *Archives f. Laryngologie*, I. S. I.

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for the production of tones, it is evident that the split between the two cannot be called glottis, but must be separated from the glottis and called rima glottidis.

"After Lauth (1835) had demonstrated the elastic membrane of the larynx and the elastic ligg. threoarytaenoideae as its component parts, a conflict in the use of the names appeared. Some authors used the words vocal cords, or ligg. vocalia, but many only the elastic ligg. thyreoarytaenoidea, whilst others, and among those especially the laryngologists, by the word vocal cord signified the entire lip bounding the glottis. Fränkel, who first called attention to this contradiction, remarks that it might have been better to have an individual name for the entire structure, but he most energetically defends himself against the explanation of the use of the word vocal cord to mean the entire vocal body.

A simplified and uniform naming in this department is absolutely necessary, and the old name of glottis vera and glottis spuria as well as the ponderous name ligg. thyreoarytaenoidea superiora, and many others, must be relentlessly thrown overboard. The names adopted by the commission are:

Labium vocale, for the prismatisc entire vocal body.

Plica vocalis, for the folds of mucous membrane.

Lig. vocale, for the elastic band.

M. vocalis, for the muscle lying within the labium.

Glottis, for the entire apparatus of the voice.

Rima glottidis, for the cleft between the vocal cords.

The last two words are used in the same sense as oris, meaning the mouth, and rima oris, meaning the cleft of the mouth. For the false vocal cords of the older anatomists, physicians use the more convenient word pocket band, and accepting this word we have:

Plica ventricularis, pocket fold.

Ligg. ventriculare, pocket bands.

M. ventricularis, pocket fold muscle.

The cleft between the two ventricular folds, the glottis spuria of the old anatomists, since it forms the exit of the vestibule, is called *rima vestibuli*.

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In the place of the former *Mm. thyreo-arytœnoidei* of the authors we have adopted:

M. thyreo-arytaenoideus . . . . M. vocalis.

M. thyreo-arytaenoideus externus (Henle) M. thyreo-arytaenoideus.

M. thyreo-aryepiglotticus (Henle) or
M. thyreo-artyaenoideus superior medialis (Krause) } M. ventricularis.

"*Macula flava* is that part of the anterior end of the Lig. vocale in which we find a little elastic nodule, which being seen through the mucous membrane gives the latter a yellowish tint. The nodule consists of an accumulation of elastic tissue which Luschka and Fränkel believe to be a fibro-cartilage. This macula flava must not be confounded with the macula lutea, which is not recorded at all in our list. This latter name was given to a small piece of articular cartilage which can be seen through the mucous membrane at the posterior end of the lig. vocale, covering the end of the proc. vocalis, of the cart. arytaenoidea, by B. Fränkel.[1]

"Cartilage cuneiformis [*Wrisbergi*]. The name of Wrisberg's cartilage has recently been disputed by Fränkel[2], because the cartilage was previously known to Morgagni and Camper. After the cartilage has borne the name of Wrisberg for so long a time, a rebaptism seems unwise. Fränkel himself proposes to allow the cartilage to retain the name of cart. cuneiformis. I refer to the rulings and principles governing the matter of personal names given in the introduction.

"*Lig. cricothyreoideum* [medium] is really no independent ligament, but it is the anterior margin of that structure, designated as conus elasticus by some anatomists. The entire conus can be demonstrated from without after removing a part of the thyroid cartilage. From the side the mm. cricoarytaenoideus lateralis and thyreoarytaenoideus are then removed. It now appears as an oblique slanting

[1] *Archiv für Laryngologie*, 1894, Bb. I. S. 14.
[2] Same, Vol. II, Heit. 2.

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yellowish membrane which is in connection with the arytaenoid cartilages behind, with the thyreoid cartilage in front, and the cricoid cartilage at the bottom. The upper margin of the conus is formed by the lig. vocale.

"Since the entire submucous tissue of the larynx is rich in elastic fibres it was called the membrana elastica laryngis by Lauth, Tortual, Luschka, and others. The conus elasticus is the under portion of the membrana elastica; the upper portion is called *membrana quadrangularis* and is limited by the Plica aryepiglottica and the pocket-band (ventricular band). Of these various names the membrana quadrangularis and the conus elasticus have not been accepted by the commission.

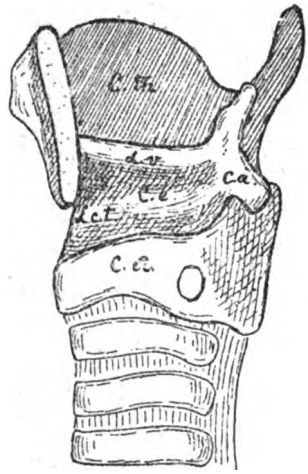


FIG. 2.

Larynx, with dissection of conus elasticus. The upper margin of the conus elasticus is formed by the lig. vocale, the anterior margin is formed by the lig. cricothyroideum medium. C. th., Cart. thyroidea. C. cr., Cart. cricoidea. C. a., Cart. arytaeneidea. C. e., Conus elasticus. L. v., Lig. vocale. L. c. t., Lig. cricothyroideum medium.

The explanatory remarks close with the following sentences: Let us now recommend the *Nomina anatomica* to the kind consideration of all interested parties Even in scientific life and among scientific workers we have a sense of communism, the cultivation of which brings honor and satisfaction to the individual, whilst it lends progress and

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prosperity to all. The adoption of the uniform nomenclature at our schools must be understood and carried out as an act of scientific communism."

All those who have contemplated and carefully weighed in their minds the magnificent work which the Anatomical Association has done, in completing this nomenclature, the result of which is a uniform language for our science, will agree with me, when I move you, my colleagues, the adoption of the above nomenclature. It will no doubt be a difficult thing for us laryngologists, to give up the notion of the vocal cord, but the Anatomical Society should not appeal in vain to our sense of scientific communism (singleness of purpose).

We must now decide among ourselves whether we will adopt the nomenclature as it has been presented to us or not; we cannot make a selection of the names from the list. Further discussion is excluded at this time. We are not asked to make a sacrifice of a conviction. We must only give up certain time-honored customs. I have made an attempt to see how it will work. While I have retained the old nomenclature in my clinical lectures, I have accepted the new nomenclature in my course of laryngoscopy during the current semester. I was thus compelled to use the old nomenclature three times a week in my lectures, and the new one twice a week. I found it difficult only in the first few hours, then I received the impression that in many respects the new nomenclature would be preferable; for example, it sounds more natural to speak of vocal-lip-paralysis or of the vocal-lip-closure than if we say vocal-cord-paralysis or vocal-cord-closure. Prof. C. Benda, in his new essay on the "Mucous-membrane-fold of the vocal-lip" (see above, No. XIII) has adopted and used the new nomenclature. The readers may form a judgment of the work by looking up this paper.[1] Aside from the name vocal-lip instead of vocal cord, there is little in the new nomenclature which we would object to. Perhaps it will be a little difficult for us to call the crypts or lacunae

[1] *Archiv. of Laryngology and Rhinology*, Vol. III.

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or folliculi of the tonsils fossulae, or to call the hiatus semilunaris, infundibulum ethmoidale and to speak of the sinus maxillaris meaning the antrum of Highmore. There are no difficulties of principle to overcome and the advantages are so great, that we feel that we must make the sacrifice of abandoning some beloved customs. The Laryngological Society of Berlin has accepted the new nomenclature, and although there is no intention of exercising any pressure in this direction, I hope that the representatives of our specialty will accept the new nomenclature.

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A FISH BONE IN THE RIGHT PYRIFORM SPACE.

By Howard S. Straight, M. D.,
of Cleveland, Ohio.

In April, 1895, a woman, 30 years of age, came to my office. She was certain that there was something in her throat. She gave the following history: The day before she was sitting at the table with her two children, codfish was one of the articles of diet. The baby tipped his chair partly over and she sprang to prevent his falling. Just before the child made this movement she had taken a good-sized piece of the fish into her mouth. As she sprang to catch the child she undoubtedly took a quick, deep inspiration. She at once felt a shap pain in her laryngeal region and she also expectorated a few drops of blood. Since this time until seeing me, twenty hours later, she had had no special symptoms. There was a slight, sharp pain in the right side of her throat upon swallowing and also a sharp pain upon pressure over the right side of the thyroid cartilage. She had slept as well as usual the night before. No blood, not even blood-stained mucus, had been expectorated, except as stated. Her voice was perfectly clear. She had had no dyspnea. While obtaining the history she expectorated a mouthful of clear mucus. Up to this time I had believed that there was no foreign body in her throat in all probability; that she either imagined there was or that she had expectorated or swallowed the offending substance. In a moment or two she again expectorated a mouthful of clear mucus. She said that this expectoration of mucus had commenced shortly after the accident and had continued during her waking hours, although it had caused her no disturbance during the night. I became convinced from this symptom that there was something in the throat, and after spraying the pharynx and larynx with a 40%

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solution of cocain I began the search. I could find nothing in the pharynx. A most careful examination of the larynx—with especial scrutiny of the ventricles and pyriform sinuses—revealed nothing. There was no reddening of any portion of the mucous membrane, nor could I detect any abrasion or puncture. While I could detect nothing, the following symptoms: slight expectoration of blood at the time of the accident and the expectoration of the mucus since that time were unusual if the patient was in error as to her diagnosis. Again the search was renewed. My attention was now attracted to a little white point at the extreme inner side of the right pyriform sinus. I pressed lightly against the right side of the thyroid cartilage and the patient complained of a sharp pain in the throat like the prick of a pin. A re-examination of the right pyriform sinus revealed the white body projecting about one-fourth of an inch above the mucous membrane. With an ordinary laryngeal forceps the body was seized and extracted. It proved to be a large fish bone one and three-fourths of an inch long. The symptoms of the patient now required no further explanation.

Remarks: This patient formed an exception to the rule. The great majority of patients who present themselves to a throat specialist because they believe that there is something in the throat are mistaken. This is the only case coming under my observation in a number of years in which a foreign body in the larynx was really present, although a large number of patients, in dispensary and private practice, came to me firmly convinced that there was a foreign body in the throat. From my experience in eight years of practice, during which I was chief of a large throat, nose and ear clinic, I infer that foreign bodies in the larynx are comparatively rare. It is not, however, a rare thing to see patients who firmly believe that they have swallowed a hair, a fish bone, a piece of straw, a feather, etc., and it is sticking in the throat. Many of these patients are neurotic. The more they consider such a possibility the more they irritate the throat by swallowing and scraping, and even inserting the finger in search of the foreign body. Such efforts soon produce so much irritation that the patient is more than ever convinced as to the correctness of his diagnosis.

It is surprising how tenaciously such a patient will cling to his opinion. I have often been puzzled to know what method

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to adopt to convince such a case of his error. As a rule, I frankly tell such patients that there is no foreign body in the throat. The opinion is often doubted for days or is not accepted at all, and someone else consulted. Patients who have a slight chronic laryngitis and who ordinarily have little or no cough or irritation of the larynx take a fresh cold. The irritation added by the cold often brings such a patient to the specialist because of something sticking in the throat. If the patient has eaten fish within a short time he questions whether he did not at that time swallow one of the fine bones. A few months ago a prominent practitioner who has chronic laryngitis came forty miles to consult me because he thought there was some foreign body in his throat. He had taken a new cold only. If patients with such an idea are hard to convince of their error after a careful examination of the throat by a specialist, it must be a difficult thing for the general practitioner to convince such a case that his fears are needless.

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DIAGNOSIS AND TREATMENT OF SUPPURATION OF THE ANTRUM WITH HISTORY OF CASES.[1]

By Price-Brown, M. D.,
OF TORONTO, CANADA.

LARYNGOLOGIST TO THE WESTERN HOSPITAL.

THE diagnosis of antral disease is frequently somewhat obscure, and consequently a positive conclusion can rarely be arrived at upon the first examination. The presence in one nasal cavity of pus of a creamy color and possessing an unpleasantly aromatic odor, while the other nasal cavity is free, is always sufficient to induce the impression that suppurative disease exists in one or another of the accessory sinuses.

The question, however, is, whether the disease is frontal, ethmoidal, antral or sphenoidal? And we must not forget that the muco-purulent discharge produced by the presence of polypi associated with atrophic disease, sometimes simulates the pus of antral suppuration. Foreign bodies and rhinoliths may also give rise to a similar character of discharge.

Cleansing the nostril by mild sprays, and following this by the application of cocain to the mucous membrane will materially aid in diagnosis. Its astringent action on the blood vessels will make the presence or absence of deep polypi certain. The same applies to foreign bodies of whatever character.

Even after this exclusion, to ascertain positively which of the accessory sinuses is the affected one is not always easy; still it is satisfactory to know that the large majority of cases of chronic sinusitis are those of antral origin. Some consider the presence of a drop of creamy pus in the middle meatus, just external to

[1] Read before the Toronto Medical Society, December 19, 1895.

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the lower border of the middle turbinated, of diagnostic value. If the pus is further back and visible in the posterior nares it is likely to be from the diseased sphenoidal. If further forward in the neighborhood of the infundibulum it may arise from the ethmoid cells or frontal sinus, but in both these latter the external orbit may likewise be affected, which is rarely the case in antral disease alone. When the quantity of pus is large, whatever its origin, it may extend to all these locations, and accuracy of diagnosis can only be obtained after thorough cleansing and shrinkage by cocain. Then, by bending the head forward, the exit of the pus from the ostium semilunaris beneath the middle turbinated can often be verified.

In my own experience, however, a serious difficulty arises here. During the last three years I have not had a single case of antral disease which was not complicated with chronic hypertrophy of the middle turbinated; and with one exception, I had good reason to believe that the hypertrophy was the cause and not the effect of the sinusitis. In every case the turbinated was bathed in pus, and the enlarged body so pressed upon the ostium maxillare that it was impossible to find it until I had, by operation, removed a section of the hypertrophic enlargement.

The neuralgias which arise from sinusitis wherever located are not of much diagnostic value. Still there is an uncomfortable feeling, a sensitiveness on pressure, and a tenderness of the affected jaw in closing the teeth during mastication which sometimes arises from antral disease, but not from suppuration of the other sinuses.

Moreau Brown, of Chicago, gives one sign in diagnosis which, in my own experience, has been of little value. He says that after cleansing the pus away by a pledget of cotton, pressure on the facial wall of the maxillary sinus would produce its reappearance. The maxillary bone I have found to be too dense to be influenced by any pressure which it seemed safe to make.

Irrigation is also recommended as an aid in diagnosis. That is by passing the point of an antral catheter attached to a syringe into the ostium and washing out the cavity with tepid water, the pus washed away would indicate the presence of the disease; but it may be remarked, that when the passages are sufficiently open to admit of the introduction of the catheter, the pus can usually be seen issuing from the ostium without the use of the instrument.

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Perhaps the greatest aid to diagnosis is that of transillumination introduced by Voltolini. It is of undoubted value, but the amount of weight attached to it by different rhinologists varies very greatly. Gougenheim says that transillumination is often embarrassing. On using it he has found well-marked suborbital umbra indicating pus, and upon opening the antrum found none—the darkening being produced by a thickened mucosa. Grant, on the other hand, thinks it may often be useful in a negative way. In several suspicious cases where pus was believed to be present, he found, on transillumination, the translucency so clear and perfect that empyema of the sinus could be positively excluded and operation forbidden.

These are only exceptions, however, and as a rule, the use o the electric lamp in the mouth will produce an umbra of more or less density beneath the lower eyelid in every case of antral disease. Milligan tells us that he uses Voltolini's lamp in every suspected case, and that whenever it failed to produce a light zone beneath the eyelid, and a red and luminous pupil, on opening the antrum, pus had been found.

Greville Macdonald lays great stress on the fact that where we have suppuration with granulation tissue or polypi in the middle meatus we can seldom be sure of the extent or severity of the disease. He says he has frequently seen cases where suppuration of the antrum was supposed to be the whole trouble, but in which it was afterwards proved that the ethmoid cells and the frontal sinus were just as seriously involved; while on the other hand, cases which had long been treated for so-called necrosing ethmoiditis turned out to be overlooked cases of profuse antral suppuration.

There is one other method of diagnosis which has always received a limited amount of favor; that is exploratory puncture either through the inferior meatus or the canine fossa. I have never seen a case requiring its use, and I doubt if it is often really necessary.

For several years I have used transillumination by the electric lamp in the diagnosis of all my cases of antral disease, but I cannot say that the result was sufficiently marked to make the diagnosis positive by it alone in a single case. I have not opened an antrum without finding pus, but still the umbra from transillumination was not marked enough, even with the darkened pupil added, to justify me in operating without the presence of more positive signs.

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Treatment: Bosworth tells us "the essential features of the treatment of a case of suppurative disease of the antrum consists in opening the cavity for proper drainage, and subsequently its thorough cleansing and disinfection."

In the latter clause all rhinologists agree. In the former they differ widely in their methods of procedure, while they unitedly accept as imperative the removal of any polypi, granulation tissue or hypertrophy of the middle turbinated which might be pressing upon or obstructing the ostium semilunaris.

Then the direct treatment of the suppuration commences and may be conducted in one or another of the following ways:

1. By direct irrigation through the ostium maxillare. Garel of Lyons is the great apostle of this method of treatment. He claims that it can be accomplished in a large majority of cases, and that the antrum can be washed out regularly and completely without any artificial opening whatever. Out of forty-four cases he succeeded by this method in twenty-eight, or sixty-six per cent, and out of these had to resort to other treatment in only six cases. The larger number were cured in a short time. Some of them by only a few days treatment. The fluid used was usually a solution of boracic acid. He uses a Heryng's catheter and inserts it with the point turned downwards between the middle turbinated and the outside wall. Passing the instrument upwards to a position above the ostium he turns the point outwards and gently engages it in the mouth of the cavity. This requires careful manipulation as the point of the catheter is in close proximity to the orbit.

At the first washing the discharge is purulent and fetid, and sometimes, caseous, but before the irrigation is over the fluid returns from the naris perfectly clear. On each succeeding washing the pus decreases in quantity. After a very few washings nothing comes away but a mass of gelatinous mucus-pus, the water itself being quite clear. At each sitting the mass discharged becomes smaller and finally disappears, the patient being cured.

2. By opening through the inferior meatus or Jourdain's method. Of this method Dundas Grant is a strong supporter. He claims that as the antrum communicates with the respiratory passages and not the digestive, the more natural opening will be by the nose. After applying cocain solution, fifteen per cent, to the mucous membrane he uses Krause's trocar and cannula pene-

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trating the antrum through the wall of the inferior meatus. Withdrawing the trocar and leaving the cannula in situ, he attaches to it the point of a syringe and washes out the cavity with warm solution of boracic acid, the fluid escaping through the natural opening. After each treatment the cannula is removed. At the next sitting cocain is again applied, the cannula reinserted and the treatment repeated. Grant claims that, although this treatment is somewhat difficult, yet the number of irrigations required being less than by other methods will justify its use.

Ziem, of Dantzic, as late as October of this year, in a paper published in the London *Journal of Laryngology*, criticizes this method very severely. The difficulty of operating in this region, the thickness of the naso-antral wall in many cases, inefficiency in drainage and the impossibility of personal irrigation by the patient are among the points which he emphasizes, and to these might be added the evil effects of a series of successive applications of cocain.

3. By removing a tooth if required, and opening into the antrum through the alveolus. This is Cooper's well-known method, and is warmly supported by such men as Ziem, Harrison, Milligan and Bosworth. When the teeth are sound, Ziem condemns removal and suggests perforating the antrum through the roof of the mouth in close proximity to the teeth, either between the second bicuspid and first molar or between the first and second molars. The fact that the opening into the alveolus or floor of the antrum, and the ostium maxillare are at opposite ends of the one cavity, must be conceded as an advantage for purposes of irrigation while the facility it affords for auto-irrigation should never be lost sight of. To keep the artificial opening clear, various silver and gold tubes have been devised for permanent insertion during the period in which treatment would be required, the tubes to be attached by silver wire to the adjoining teeth, and plugged to prevent the entrance of food into the antrum.

4. Desault's plan of opening the canine fossa appears to be steadily gaining ground. It is claimed that the patient can treat himself equally well in this way as through the alveolus, and that it will frequently prevent the sacrifice of a sound tooth. A tube with plate to fit the adjacent gum can be retained just as well, or even better than in the alveolus, and there is, if anything, less danger of the passage of food into the antrum.

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Some operators have gone much further in this direction; and without hesitation chisel away enough of the external antral wall to admit of the insertion of the little finger and thorough digital exploration of the diseased cavity. The antrum is then curetted and washed out and packed with iodoform gauze. This is changed regularly, the cavity being kept open until thorough healing takes place. Still, although revived recently, this plan is not new, for we read of La Morier, as early as 1740, treating a case successfully in this way.

5. The Robertson plan of combining the chiselling of the canine fossa, with the perforation of the inferior meatus in one or two places has many exponents to-day. Scanes Spicer, of London, strongly favors this method as the only one securing thorough and effectual drainage in many of the most difficult cases. He makes a large opening in both the anterior and internal sides of the antrum, and these openings are intended to be permanent. He then irrigates thoroughly with boracic solution and follows this by packing the antrum tightly with creolin gauze. This is left in for forty-eight hours and then removed. No form of tubage or mechanical drainage is used; but the cavity is syringed out thrice daily with the same warm solution. The patient is also directed to blow out the cavity frequently from the mouth to the nose and also from the nose to the mouth. He claims rapid healing by this means and, although the perforations contract, they usually remain permanently open to some slight extent, without producing inconvenience to the patient.

This multitude of methods of treatment of antral disease, all practiced to-day by leading rhinologists, each one preferring his own special plan as the best, while utilizing one or other of the remaining ones in exceptional cases, seems to me to prove that the results are not, on the whole, as satisfactory as we whould like them to be. A few cases are cured quickly, all are relieved, but the treatment requires to be carefully, systematically, and persistently followed to obtain a good result. Often the routine has to be changed and more direct efforts applied, and even then a complete cure does not always follow.

As the last four cases taken from my own case book have differed materially from each other both in history and in treatment, I will close by briefly referring to them.

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Case I. July 27, 1894, Mr. G. L., 25 years of age, lecturer in classics. Operation by drill in the canine fossa for antral disease.

Previous history: Three brothers and mother had died of consumption. I had previously treated him for nasal polypi and hypertrophy of the middle turbinated on the left side, accompanied by a large amount of purulent discharge. The removal of the two former did not produce any material improvement in the latter. I then tried to wash the antrum through the ostium, but the result was imperfect as well as painful; and as the teeth were sound, I concluded to operate, on the date mentioned, in the canine fossa.

After the operation I irrigated the cavity and then plugged with cotton wool until I could get a silver tube made to fit. On the tube a flange cap was attached to the lower side, fitting the gum. This kept the tube from slipping into the antrum, while the upper lip pressing the surface of the flange retained it in position. A plug in the tube itself was never found necessary.

The patient soon learned to irrigate the antrum successfully and regularly. The relief was marked, and the pus for a while diminished materially in quantity; but when winter came on, it increased again. From time to time the drug used was changed, muriate of ammonia, potassium chlorat, peroxide of hydrogen, boracic acid, all being tried, but each failing in turn to suppress the pus formation.

Once during the winter I enlarged the opening slightly and curetted the antrum, putting in a new silver tube in place of the old one. In May, as I was afraid of the development of tuberculosis, I advised the patient to spend the summer in the Northwest. This he did, faithfully following out the treatment during his absence. He returned in September, much improved in weight and general health, but without apparent improvement in the antral disease.

I removed the old tube and again thoroughly curetted the antral lining, and placed in position a new silver tube with a flange at a slightly different angle.

This time I prescribed a solution of resorcin as a wash. The improvement has been very marked. The discharge has greatly decreased, and there is good probability of complete cure, although it is nearly seventeen months since I first opened the antrum.

Case II. July, 1894, Miss A., about 50 years of age. Operation by drill in canine fossa of left side.

She had been troubled for several years with left antral and ethmoid disease. The former could be traced to dental caries. To relieve her, a dentist, at the time, had removed all her upper teeth. He told her that she was suffering from disease of the

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antrum. Nothing positive, however, was done until she came to me in 1893. I then removed part of the middle turbinated, and by liberating the ostium maxillare from pressure and the use of sprays she was greatly relieved. The discharge materially diminished and at times almost disappeared. It finally got worse again, and she came, as stated, for further treatment in July, 1894.

One reason for operating in canine fossa in this case was the imposibility of an alveolar operation on account of the absence of the teeth. On the first irrigation a considerable amount of pus escaped through the ostium. The solution used was potassium chlorat, blood temperature. At each sitting the amount of pus became less and less. The patient was unable to perform the irrigation personally and came once a day to the office for treatment. In the course of a month, by daily washings, the pus had entirely ceased issuing from the antrum, and in two more weeks the opening was allowed to close. A tube similar to that of No. 1 was used in this case also.

There was still some discharge from the ethmoid cells, of which the patient was relieved by the use of mild sprays.

I saw her again in January of the present year and there had been no return of the antral suppuration.

Case III. April, 1895, Miss L. G., 33 years of age, teacher. Several members of her family had died of pulmonary tuberculosis. Has had catarrh of yellowish pus from left nostril for years. On examination, I found enlarged middle turbinated of left side completely filling central part of nasal cavity, and pressing upon the septum as well as the outside wall. The enlarged body was bathed in milky pus of that peculiar odor indicative of antral disease. On transillumination an umbra could be seen beneath the left lower eyelid.

Although antral disease was evidently present, it took some time to sufficiently remove the turbinated to be able to irrigate successfully through the ostium. By June, however, the mucous membrane was pretty well healed, and on the 28th I washed out the antrum through the ostium semilunaris with a warm solution of resorcin. I used an Eustachian catheter with the point bent to a right angle and attached to an ordinary rubber syringe. There was at once a very free discharge of offensive pus of a cream color. The amount of fluid used at the time was nearly a quart. The latter half of it came away quite clear.

June 29. Irrigation repeated. Fluid passed in and out through the ostium freely, but contained less pus.

June 30. This time irrigation required more force. There was very little fluid pus discharged, but a number of small bodies, resembling polypi, were washed out.

July 1. Removed with forceps small slough from anterior

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border of ostium maxillare. Washed antrum as before, bringing away some polypoid tissue with very little pus.

After this I irrigated the antrum daily through the ostium with resorcin solution, with a similar result.

July 8. A very large mass was washed out, with absolutely no fluid pus.

This was, in fact, the last discharge from the antrum. Although the cavity was washed out at intervals until the 25th of the month, nothing more came away. The antrum had healed and treatment was discontinued.

Three months later the patient returned as there was again a slight discharge. This, however, seemed to arise from a small angiomatous mass at the ostium, and on its removal, followed by two or three washes, the discharge ceased.

With regard to the practicability of washing the antrum by the natural opening in this case, I may say that I inserted the point of the instrument in the reverse way to the one recommended by Garel. Instead of passing the catheter up to the ostium with the point downwards as advised by him, I found that the best and easiest way was to slip it in with the point upwards until it reached the ostium, and then by turning it gently outwards at an angle of 90° it became engaged within the orifice. Several times before inserting it I applied cocain on a pledget of absorbent cotton to the vicinity of the opening. Latterly, however, I did not find it at all necessary to do so.

Case IV. June, 1895, Miss B. B., 25 years of age, bookkeeper, applied for treatment. For several years she had been troubled with severe nasal discharge from left nostril. On examination the indications were very similar to the others in regard to the condition of the middle turbinated and the presence of pus.

Sometime after reducing the turbinated enlargement I commenced washing the antrum as in Case III, with solution of resorcin through the ostium. This was continued daily and up to August 10th, but although the discharge diminished a good deal, it did not cease, and I decided to open the antrum, this time through the alveolus, to enable the patient to perform personal irrigation.

A dentist removed the first molar, and after applying a fifteen per cent solution of cocain to the socket, I opened a way into the antrum with a burr drill. This, as in the other cases, caused but little pain. I made the opening pretty large, and after washing out the pus, curetted the inner surfaces of the antrum. I did not insert a tube in this case, but directed the patient for some days to insert a pledget of cotton in the opening during meals to prevent the entrance of food. This she soon discontinued as she believed it unnecessary. She, how-

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ever, washed out the cavity regularly twice a day with a solution of boracic acid.

For several weeks the opening easily admitted the point of the syringe. Then, on contracting a little too much, it was easily and painlessly enlarged again. I think I only had to enlarge the alveolar opening twice during the three months during which irrigation was required. Latterly, as the pus diminished in quantity, the washings became less frequent; and during the latter half of November the discharge entirely ceased, consequently the alveolar opening was allowed to close. Since then there has been no discharge whatever of pus from the naris.

In closing the history of these cases it may be noted that three out of four or seventy-five per cent were cured, with a fair prospect for the remaining one; and also the unusual fact that they were all cases of left antral disease.

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HAY FEVER—A SUCCESSFUL TREATMENT FOUNDED ON A NEW THEORY.*

By W. F. Strangways, M. D.,
OF FLINT, MICH.

DURING the last eighty years many eminent physicians have proposed many theories to explain and many remedies to cure hay fever. In the hands of the general profession it has been difficult to disprove the theories, but very easy to determine the inefficiency of the cures. Many earnest, able investigators have made cures in their own practice and, with confidence, they have given to us their treatments, but unfortunately where they found much virtue we found none.

Recognizing these facts it is with much diffidence I present this paper; yet I am convinced I am on the right track, and if I fail to give the whole of the true explanation I shall suggest lines of investigation which, in the wider field of the whole profession, will lead to a full solution of this puzzling disease. This conviction, and it alone, has led me to offer my paper this year instead of waiting until time and a much wider experience approved or disapproved it.

To prevent misunderstanding, I wish to say I think the term hay fever is used too promiscuously by many writers. My observation teaches me that there is a difference between hay fever and the coryza, with somewhat similar subjective symptoms produced by many forms of irritation.

Exposures to irritating dust will cause stenosis, sneezing and a watery discharge, which later on becomes muco-purulent.

If we examine the nares we find an inflammatory action, whereas in hay fever it is not inflammatory; it is a vaso-motor

* Read before the Detroit Medical and Surgical Association, November 11, 1895.

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paresis, and is easily diagnosticated from the inflammatory coryza by the bluish-gray swollen appearance of the inferior turbinateds and by the fact that the first train of symptoms continues through to the end.

That you may easily grasp my ideas and follow my reasoning, I shall first state the commonly accepted theory of hay fever, and some of the reasons why I can not accept it. Later I shall give the theory I propose and the reasons for accepting it, with history of but four cases.

The commonly accepted theory is that hay fever is due to the irritation caused by the impact of pollen in the nares of a person of the neurotic habit with some pathologic condition of the upper air passages.

A few authors object to certain parts of this theory, yet the tendency of our whole literature on the subject is, either by inference or direct statement, to support it. I admit that as a rule we have pollen, but I deny that it is the impact of pollen or that it is an irritation caused by it that is the exciting cause.

The various pollens that cause hay fever are very light and never found in comparatively large quantities. The irritation caused by their impact can not be anything like so great as that caused by ordinary dusts, yet hay fever patients can live in clouds of dust without having hay fever. Blakley says that the largest number of pollen grains deposited in one day on his contrivance was 880, and that is, as far as I know, the largest number found by any investigator.

From this we can calculate that rarely do 1000 grains of pollen enter the nares in a day, but one grain for every twenty-five inspirations.

Were there one hundred times as many, their impact could not cause sufficient irritation to excite a coryza. Again, if it were a mechanical irritation it would be hard to explain why rose pollen should cause the disease in one man where ragweed pollen had no evil effect, while his neighbor, uninfluenced by rose pollen, was attacked when exposed to ragweed pollen.

Still further, when hay fever attacks a man he ceases to breathe through the nares on account of the partial or complete stenosis, consequently the pollen is not drawn into the nares; however, the hay fever continues.

Bosworth says the chief pathologic lesions predisposing to hay fever are the obstructive, that is, those lesions which force

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the patient to habitually breathe through the mouth when sleeping or taking active exercise. If hay fever were due to the impact of pollen such patients should be less prone to the disease. It is true that this objection is met by the statement that such nares are much more sensitive, hence need far less irritation to produce a coryza. But this counter-statement loses much of its force when we remember we are constantly examining exquisitively sensitive nares where there is no hay fever, although the patients have the neurotic habit and are in an atmosphere laden with pollen.

All its force disappears when we examine the reports of cases treated by the advocates of the sensitive areas and find that the destruction of these sensitive areas cures but a small percentage of cases.

Undoubtedly sensitive areas and obstructive lesions make the patient less able to combat the evil influence of certain pollens, and the cure of these lesions often produces enough change in the circulation, secretions and drainage of the nares to save the sufferers from future attacks. I do not think that these lesions are absolutely necessary, for in over fifty per cent of the cases the attacks continue after we remove all such lesions, while many find their attacks worse after our best rhinologists have done all that modern science commands to restore the nasal chambers to healthy condition.

Disease of the nares tends to cause a sluggish circulation and altered secretions which lessen our power of resistance while it increases the force of attack.

I shall refer to this again in discussing my own theory, and shall now refer to the third link in the commonly accepted theory, "the neurotic habit." This is supposed to be necessary because a few patients are said to have had attacks of hay fever caused by mental impressions, while others have their attacks begin at the same hour of the same day each year. The first is true of almost all diseases where there are no organic changes, and the last is easily understood when we remember that the patients are exposed to daily increasing quantities of pollen before the attack begins.

Up to the hour for attack the inhibitory influence of the mind retards the attack, but when the expected time arrives the very opposite mental influence obtains.

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Hay fever may be a neurosis, but I am convinced that the neurotic habit has but little to do as a predisposing cause. Were it otherwise, treatment directed to the cure of this habit would relieve a large percentage of cases, yet we know we can devise no treatment to build up the nervous system which has any material influence on the severity or certainty of return of the attacks. We know that the hyperesthetic neurotic habit is much more common with females, yet more males are subject to hay fever. We also know that only a very small percentage of people with the neurotic habit have hay fever, although they have chronic rhinitis of the obstructive character and are exposed to pollen-laden air.

These are only negative objections, but there is a strong positive one which is that we have many cases of hay fever where we have no neurotic habit. I am sorry I can not state positively how many of the seventeen cases I have treated this fall were free from all neurotic symptoms and history, not only in themselves but, as far as they knew, in their families for three generations. I do know that at least eight were entirely free, while six had no neurotic tendencies that I noted, but my record of their histories is too limited to give a decided opinion. The other three were neurotics.

For ten years or more I have been a victim of hay fever, and if any of you gentlemen still think the neurotic habit is a requisite, when I have finished reading my paper, I shall be glad to have you find a single symptom of such a constitutional tendency in me or the history of it in my children, my ten brothers and sisters, my parents and their fourteen brothers and sisters, or in my grandparents.

A theory against which I can raise so many strong objections is, to say the least, so weak that we may well spend the time necessary to examine one offered in place of it which claims that hay fever is caused by a toxin generated from pollen by a fermentative process in an alkaline solution.

To avoid confusion I state my theory in as few words as possible. It is probable this toxin may be generated from other substances than pollen. In fact, pollen may simply supply the microbe that generates the toxin from substance belonging to the nares of hay fever subjects, and it is quite possible that a few other substances than pollen may convey such a microbe into the nares.

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This toxin produces a vaso-motor paresis with disordered secretions and these disordered secretions by irritation cause the paroxysms of sneezing. Some pathologic lesions of the nose predispose to hay fever by causing altered secretions suitable for the fermentative process and by causing a sluggish, poor circulation lessen the normal inhibitory powers. Acid solutions used as douches tend to stop this fermentative process and the free internal administration of muriatic acid renders the system more immune to the toxin, possibly by causing an increased production of certain constituents of the blood, but more probably by lessening the alkalinity of the blood as well as that of the nasal secretions. Pepper is an active irritant of the nasal membrane, whether it touches it by the gentlest contact or most forcible impact, just as mustard irritates the skin.

At first I thought pollen might contain similar irritating properties and began to investigate along that line. I found it very difficult to obtain ragweed pollen in sufficient quantities for experiments, and until I had rendered myself immune to it I dared not handle it, hence my first experiments were with other pollen, especially that of the cucurbitæ. Of the many experiments I made with different pollens I shall refer to only two or three.

In test tubes I placed three solutions—first, one of pure water; second, one with two minims of acetic acid to one ounce of water, and third, one with five grains of bicarbonat of soda to one ounce of water.

On these solutions I dropped pollen. In the solution of pure water and water with acid the pollen sank rapidly, while only a part of the pollen dropped on the alkaline solution sank, and it sank slowly. Around the pollen in the latter solution I noticed a decided grayish exudate form quickly and the yellow color disappear. Around the pollen in the pure water a similar exudate formed in smaller quantities and more slowly, while but little formed in the alkaline solution. Under the microscope I found a small amount of amorphous translucent material that had escaped from the pollen in the alkaline solution. From the pollen in the pure water considerably more was found, while in the acid solution there was a large amount and it was arranged in rods or threads or, as some observers say, mycelium-like bodies. At first thought I thought these might be the minute organisms referred to by Helmholtz as the cause

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of hay fever, and that they would indicate a lack of alkaline constituents in the nasal secretions, but many tests indicated as great an alkalinity as normal, if not more.

Then it occurred to me that the rapid exosmosis in the acid solutions might mean a rapid disorganization of the pollen and prevention of its evil influence. This seemed the more probable from three facts: first, that even weak acid solutions stop the movement of spermatazoa which have a similar function to pollen; second, that hay fever is more common in men than women, though woman's blood is less alkaline than man's; third, that for years we had used alkaline solutions in the nares of hay fever patients with little or no benefit.

It seemed quite possible that in pollen there were certain protoplasmic elements which in warm alkaline solutions changed into the toxin causing hay fever, and that acid solutions might prevent this change. On this supposition I washed out the nares of a hay fever patient with 2 minims acetic acid and 4 grains of salt to the ounce of water. It gave him marked relief and continued to do so. For him no other treatment was necessary, but in other cases I found the turbinateds remained swollen in spite of the comfortable effects of the wash.

Between the swollen opposing membranes is an excellent place for fermentation as it gives heat and moisture with blocked drainage. Although the patients could not breathe through the nares pollen was forced into them, for, during oral respiration, pollen is deposited in the oro-pharynx and forced upwards by blowing the nose and the paroxysms of sneezing. It is quite likely that the oro and naso-pharyngeal cavities afford opportunities for the formation of the special toxin. The entrance of pollen in this manner explains the continuance of the malady for weeks after nasal respiration ceases, and it also suggests the necessity for cleansing with an anti-fermentative, the oro and naso-pharyngeal cavities.

Experience with nasal syrays had led me to reject them for hay fever, and, indeed, for most nasal complaints. For some months I have been using Dessar's nasal douche cup and find it much more satisfactory than sprays.

For those cases where the swollen condition continued after using the wash I added $1\frac{1}{2}$ grains of resorcin to the ounce of the mixture, as it is an excellent anti-fermentative and causes more or less contraction of the coats of the vessels in the turbinateds.

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This was so satisfactory that I used it for all cases and obtained either partial or complete relief. Where only partial relief was obtained I attributed it largely to the fact that it is so difficult to reach all parts of the nasal cavities if we have more or less stenosis. This brought up two new points for consideration: first, could we, by internal treatment, render a patient immune to the toxin? Second, should we remove, by surgical means, the obstructive lesions during the attack.

As I stated in an early part of this paper all attempts to build up the system and cure the neurotic habit had given very poor results; yet, if my theory is correct there must be a great deal less resistive force in patients with fairly healthy nares who suffer from hay fever than there is in patients who have no hay fever, though they have serious obstructive lesions of the nares. In our systems we have certain constituents that guard them against the attacks of toxins.

Lately much investigation along this line has greatly advanced preventive medicine, yet we know but a small part of what is to be known, so that we are pardonable if we endeavor to strengthen the defensive forces by well-known remedies without knowing how they act.

The fact that acid douches had a decidedly beneficial influence, suggested the internal administration of acids, and I determined to prescribe hydrochloric acid, giving to each patient from one to two drams daily, according to circumstances. In my own case the acid douche gave complete relief, but if I ceased using it hay fever symptoms would return in about thirty-six hours. Having repeated this experiment three times I decided to stop the nasal douche and try the effects of hydrochloric acid internally. Within twenty-four hours after I commenced using it my hay fever disappeared and a feeling of general well-being ensued, and I became so immune to the influence of ragweed pollen that I was able to carry on my investigation with it instead of the innocent pollens. This free administration of hydrochloric acid was beneficial in every case it was prescribed, and it suggested the possibility of the blood being too alkaline. I made no attempts to determine this by examination of the blood since it is so extremely difficult to determine its exact alkalinity.

I have given considerable attention to the nasal secretions and find that on the average they were more alkaline in my hay

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fever patients than in other patients I was treating for nasal difficulties at the same time. I found the degree of alkalinity in obstructive nasal troubles varied much. Mr. D., saloonist, came to me for nasal trouble, I removed from the left nares polypi and some hypertrophied tissue. Four days later when he called I found the secretions in the left nares markedly alkaline while those in the right were neutral but became alkaline after I irritated the right turbinateds to cause a free discharge. A Mrs. W. had slightly acid secretions, but later on when she caught a cold they became alkaline. My study of this part of the subject is entirely too limited to make any conclusions worthy of your consideration.

When I found that two drams of hydrochloric acid a day rendered me immune to ragweed pollen I gathered the plant and spent much time in trying to obtain a fair amount of the pollen for experiments, one of which was to make a number of infusions from it, all of which appeared to be harmless although they were decidedly bitter and of a yellowish-brown color. I dropped them into the eye and applied them to the turbinateds of hay fever patients without any immediate effects or the tendency to cause an earlier return of the hay fever although I discontinued the acid treatment.

Another experiment was to snuff up the pollen and in an hour wash it out with acid solutions. Although a hay fever subject, I did this with impunity save for a slight irritation which lasted but a few moments, and was similar to what nearly all powders caused in my nares. I selected an hour as the length of time to elapse before I washed it out, as in that time any irritant action would be exerted and there would not be time for the formation of the toxin.

I may say I could not obtain the pollen in quantities free from other parts of the flower, but by frequent microscopical examinations I was convinced over thirty per cent by volume was pollen. These two experiments led me to conclude that hay fever was not due to irritating or paralyzing properties existing in pollen as it enters the nares, and I was forced to accept the idea that a toxin was produced by fermentative changes. This view was well sustained by the acid treatment. I tried to eliminate all psychical influences as will appear in the few cases I give:

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Case I. E. Mc., 16 years of age, robust, healthy lad free from any neurotic history. A year ago complained of nasal stenosis, sneezing and watery discharge. Consulted me last spring. I found right septal exostosis, turgescence of inferior turbinated and adenoids. I removed turgescence by galvanocautery and adenoids with curette. During the summer he had no trouble, but on September 16th he consulted me for a mild attack of hay fever which he thought was a return of his catarrhal trouble. Wishing to avoid psychical influences I told him I should give him a wash and commence active treatment later on. I prescribed the acid wash and on September 20th he reported decided relief, but all the trouble had not disappeared. I continued the douche and gave internally hydrochloric acid one dram a day.

September 24. He reported himself cured but continued the treatment giving only half the first amount of the acid.

Case II. R. P., 20 years of age, a strong, healthy farmer with a hay fever history running over four or five years. Consulted me October 12, 1894. Found left septal exostosis, hypertrophy of the turbinateds and adenoids. Removed exostosis with saw, hypertrophies with cold wire snare and adenoids with curette. From December until August he reported his nasal trouble cured.

August 29. He reported as bad as ever stenosis, watery discharge and sneezing. Rhinoscopic examination revealed a typical case of hay fever so I gave him the acid douche.

September 6. He reported he was much better and would be all right if he could use his douche every hour. Continued douche and prescribed internally hydrochloric acid.

September 13. He reported all trouble had disappeared within forty-eight hours of the time he commenced taking the medicine.

October 26. Has had no hay fever since. There was considerable turgescence of right inferior turbinated, and though he claimed it caused him no trouble, I cauterized it.

I report this case because his hay fever was worse after almost all pathologic lesions of nares had been removed, and because he is an unusually robust man with nothing in his own or his family history to indicate a neurotic habit.

Case III. F. B., 39 years of age; no neurotic history but typical attacks of hay fever for ten years.

Septemaer 8. Gave acid douche.

September 11. He returned saying hay fever was cured. Stopped douche, and on September 14th he reported hay fever had returned. Gave him hydrochloric acid 10 minims every three hours, and after the second day only three times a day; relief was complete.

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Case IV. Miss N. M., 14 years of age, farmer's daughter, strong and well all the year save from early in August until the first frost. No history of neurotic trouble either in herself or family. Consulted me August 17th. I found the nares occluded with swollen and hypertrophied turbinateds. Her attacks were so severe that she was forced to go north for the four preceding years, yet she denied having any nasal trouble during the rest of the year. Used cocain and with the cold wire snare removed hypertrophies. Gave Dobell's solution for a wash with syrup of hypophosphites internally.

August 21. Was but little better save that her asthma was not so severe. Snared off a little hypertrophied tissue that had escaped my wire at the first operation and continued Dobell's solution and the hypophosphites.

August 26. Asthmatic symptoms had disappeared entirely, but the sneezing, stenosis and watery discharge continued. I washed out nares and naso-pharynx with acid wash, and patient asked me if I could give her the same wash as it was far better than the one she had at home, that it made her head feel ever so much better. I gave it to her and prescribed hydrochloric acid 10 minims, six times a day.

From that time on she had no hay fever. I held out no hope of relief for this year until she reported her hay fever gone. I wished to avoid all psychical influences and did not give her the acid treatment until surgery and Dobell's solution failed.

I think the acid treatment would have failed in this case had I not removed the hypertrophies, for while they remained it would have been impossible to get the anti-fermentative wash to reach more than a limited part of the cavities, while the sluggish circulation caused by such lesions handicapped the powers of those constituents of our economy which resist the attacks of toxins.

I place stress on the imperfect circulation, for if it be true that hay fever is due to a toxin, we must strive to obtain a healthy circulation in the turbinateds to resist the evil influence of it. We all know that many cases of hay fever are cured by removing obstructive lesions, and if the theory I advance is correct it is easy to understand why such cures should occur because we improve the drainage causing the pollen and its products to be cast out; we change the secretions back to normal, lessening the tendency to fermentation, and we improve the circulation so that it has a much greater power for resisting the attacks of the toxin.

I resort to surgical treatment during the attacks since I have employed the acid treatment and I find very little reaction.

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I may say I believe much of the reaction experienced by some is due to lack of thoroughness. If I use the snare I endeavor to remove every bit of the hypertrophy attacked, and if I use the galvano-cautery I burn deeply enough to cut through the venous sinuses. To cauterize lightly irritates severely without cutting off much of the circulation. Thorough cauterizing causes no more irritation and tends to prevent engorgement, consequently, causes less reaction.

I have used the acid treatment only since the latter part of August and have treated in that time only seventeen cases. Of these cases, four needed only the douche and in six I resorted to surgical treatment as well as the acid treatment. Thirteen reported complete relief, one did not make any report, two got complete relief while using the douche but thought it was due to an infusion of snake-root which they were taking at the same time, and the other one refused to take the hydrochloric acid or to allow me to use surgical means which were strongly indicated, as some vender of secret nostrums for hay fever advised him to not do so; still he says the douche did benefit him very much.

In a few cases for the douche I used other acids than acetic, especially hydrochloric and citric, but my experience with them is too limited to determine their advantages and disadvantages.

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ABSTRACTS FROM CURRENT RHINOLOGIC AND LARYNGOLOGIC LITERATURE.

By Wm. Scheppegrell, A. M., M. D.,
of New Orleans, La.

Assistant Surgeon Eye, Ear, Nose and Throat Hospital; Chairman Section on Otology, Rhinology and Laryngology, Louisiana State Medical Society; Member Société Française d'Otologie, de Laryngologie et de Rhinologie; Vice-President New Orleans Electric Society, etc.

THE REMOVAL OF A NASAL POLYPUS IN A CASE OF EMPYEMA OF THE ANTRUM OF HIGHMORE FOLLOWED BY FATAL MENINGITIS.

Dr. Rayser (*Ibid*) also reports a case of a coachman, 19 years of age, suffering from nasal obstruction and abundant secretion from the right side in the upper part of whose nasal passage a large mucous polypus was found. The polypus was removed with the cold snare, the operation being followed by an abundant discharge which gave rise to the suspicion that a cyst had been opened. During the following days several smaller polypi were removed disclosing a mass of pus in the upper half of the nostril. A week later there developed suddenly rigors and high fever, and the next day marked meningeal symptoms, the patient dying four days afterwards. The autopsy showed purulent meningitis, empyema of the left antrum of Highmore, and a passage large enough to admit a probe from the cranial cavity through the cribriform plate to the nasal cavity.

Dr. Rayser thinks that he is justified in the supposition that in this case there was an extention of the dura mater (meningo-

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cele) into the nostril. When the polypus was snared a communication was established between the cranial cavity and the nose, and along this passage the infective material from the maxillary sinus found its way causing the development of meningitis.

Although this is a rare case, still its occurrence shows the necessity of exercising great care in these operations. Where the accessory sinuses are diseased, these should be opened and drained before any operative procedure in the nose is undertaken which would otherwise be infected by the fetid secretion.

SIMPLE MANNER OF OVERCOMING THE CATARRH FOLLOWING THE ADMINISTRATION OF IODID OF POTASH.

From his success in three cases Dr. Cohen (*The Lancet*) advises that, in cases in which there is coryza from the use of iodid of potash, tincture of belladonna be used, 5 minims being added to each dose of the potash.

QUININ PROPHYLACTIC AGAINST INFLUENZA.

In order to substantiate the experiments of Dr. J. G. Sinclair, Dr. Graser reports (*Deutsche Medizinal-Zeitung*, November, 1895,) the result of Surgeon General Coler's experiments in the German army during an epidemic of influenza.

Each soldier of one squadron received for twenty-two days 0.5 grammes of muriate of quinin in 15 grammes of whiskey. While in four other squadrons there was an average of thirty affected with the influenza, in the second squadron, in which the men had been given the quinin, only seven were affected, three of these becoming sick on the first day and before the medicine could become effective. After the conclusion of the experiment no more of this squadron became affected with the influenza, while among the men of the other squadron there were continually new cases. From this experience Dr. Graser concludes that quinin acts specifically against influenza if taken at the proper time and in the proper dose.

NECROSIS OF THE MIDDLE TURBINATE.

Dr. A. B. Thrasher (*New York Medical Journal*, December, 1895,) agrees with Bosworth that of all the nasal accessory

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cavities the ethmoidal cells are most frequently the seat of disease. Most rhinologists will corroborate this assertion to-day, but a few years ago no one would have believed the statement.

The frequency of disease is partly accounted for on anatomical grounds. The middle turbinal is situated in the apex of the nares, hemmed in on both sides by bony walls, giving little room for inflammatory swelling, and causing great pressure when swollen. In acute rhinitis the inferior turbinal is most frequently inflamed, but when the middle turbinal is affected there is great pressure on the adjacent wall, and the openings of the antrum, the frontal and sphenoidal sinuses, and the anterior and post-ethmoidal cells are easily closed, thus causing retention of normal secretion which may lead to purulent inflammation.

While ethmoiditis is comparatively frequent, necrosis of the bone is rare. Zuckerkandl has never seen a case, and Woakes, in spite of his statement that necrosis is present, as a rule, in ethmoiditis shows only two of his twenty cases to have been affected in this manner. Woakes claims that polypi are caused by necrosing ethmoiditis, but Bosworth, on the other hand, thinks that the pressure of polypi is a frequent cause of ethmoiditis; there is probably truth in both of these suppositions.

The symptoms of necrosis are pain of the intra or supra-opital nerve, a nasal discharge which is sometimes very unpleasant, obstruction to nasal breathing, anosmia and obstruction of the natural opening of the accessory cavities giving rise to symptoms characteristic of each. The treatment in simple cases consists of alkalin sprays with superficial or deep incisions. When a case is of long standing, and especially when there is osteitis or necrosed bones, the treatment should be radical, the diseased parts being removed with the snare, toothed-scissors or drill.

THE VALUE OF SHARP CURETTES IN THE REMOVAL OF SEPTAL PROJECTIONS.

Dr. Hanan H. Loeb, (*Journal of the Am. Med. Ass'n.*, January 4, 1896,) after reviewing the various mechanical appliances which have been advocated for removing projections of the nasal septum describes a number of curettes which have

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been made for him by A. S. Aloe Company, St. Louis, which he has successfully used in these operations. He does not consider the preliminary turning up of the mucous membrane necessary, as the scabbing which sometimes follows septal operations seem to be more dependent upon the lack of smoothness of this surface after operation than upon the cincident removal of the mucous membrane.

The amount of hemorrhage that occurs after the use of this curette does not differ from that occasioned by any other instrument for similar purposes.

A CYST OF THE NASO-PHARYNX AND A CYST OF THE ORO-PHARYNX.

Dr. Jonathan Wright (*New York Medical Journal*, December 7, 1895) calls attention to a paper published by Thornwald ten years ago, in which he claims that sinuses in the naso-pharyngeal mucous membrane, are frequently the seat of chronic inflammation, and are the origin of the symptoms ascribed to post-nasal catarrh. That the "pharyngeal-bursa" is a normal structure in the naso-pharynx, and that naso-pharyngeal cysts are very common.

Although great credit is due to Thornwald for calling attention to these conditions, still the paper has fallen into discredit on account of its many inaccuracies.

In the first place, sinuses in the naso mucous membrane, are not very common, and naso-pharyngeal cysts are rare; most cases of naso-pharyngeal catarrh have for their lesion neither cysts nor sinuses, and "pharyngeal-bursa" are not normal and anatomical structures, but the result of chronic inflammation. The formation of the bursa and of the cysts and sinuses, when occurring, is due to the fact that the folds and projections of the mucous membrane of the naso pharynx, of infancy and adolescense, become agglutinated at their edges, or on contiguous sides, thus forming sinuses and closed cavities, which are favorable to the production and discharge of muco pus. In cases of retention, the walled in space dilates to the proportion of a cyst.

Dr. Wright relates two cases, one of a small cyst of the naso-pharynx, which was probably a dilated lymphatic space, and also a cyst of the oro-pharynx, both of which were removed by the cutting forceps.

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PRELIMINARY TRACHEOTOMY AND TAMPONADE OF THE PHARYNX AND ADITUS LARYNGIS FOR OPERATIONS IN THE ORAL CAVITY.

Von Bloch (*Hospitals Tidende*, *Deut. Med. Zeit.*) has used the Trendelenburg's method of operating since 1886, and with excellent results. The operations for which this method is indicated, are resections of the superior maxilla, removal of large tumors from the naso-pharynx, etc.

After the patient has been chloroformed, tracheotomy is performed, and a large cannula inserted. The chloroform inhalation is now continued through the cannula, and the aditus laryngis and pharynx tamponed with iodoform gauze. For this purpose the author uses a strip of gauze 10 to 12 *cm.* wide and 125 *cm.* long, which he packs firmly, but without violence. The real operation is now commenced. When this is completed the wound is disinfected and tamponed, and the gauze in the pharynx removed.

After the mucus collected in the throat has been removed the cannula is removed from the trachea and the wound may be left as it is or, as the author prefers, several approximating stitches may be inserted. As a rule the wound from the tracheotomy heals without complications.

The above method has been successfully used for several years, but the method of anesthetizing by means of a rubber tube passed through the nostril into the oro-pharynx, as recently introduced by Dr. Souchon, of New Orleans (*Med. News*, November 23, 1895), has made this additional operation unnecessary in many operations about the mouth and face. Dr. Seiler also claims (*Maryland Med. Journal*, November, 1895) that his *ventral position* for operating in these cases will obviate the necessity of a preliminary tracheotomy.

LEGISLATION VERSUS INDISCRIMINATE EXPECTORATION.

Dr. Wm. G. Bissell, bacteriologist of the Department of Health, Buffalo, N. Y. (*New York Medical Journal*, December, 1895) after reviewing the discovery of the bacillus of tuberculosis and its importance in the prophylaxis of tuberculosis, calls attention to the necessity of legislation to prevent indiscriminate expectoration in public places.

Tuberculosis is a communicable disease, a frequent cause being the inhalation of tubercular material from dried expec-

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torations. The floors of street cars are the common receptacles for expectoration, and with a view of testing the infectious character of this sputum, fifty-six microscopical examinations were made of selected samples from the floors of street cars, and four of these examinations revealed the presence of the germ of consumption. From the enormous number of people who frequent street cars, we can easily appreciate that a considerable amount of dried expectoration must necessarily be inhaled.

The contamination of street cars, as well as of theaters, churches and public buildings can be prevented, and that principally in two ways:

1. By educating the public in general as to the danger of indiscriminate and careless expectoration.

2. By the passage of a city ordinance prohibiting the expectorating on the floors of cars, public buildings and similar places.

Dr. Bissell's article is on a subject of wide hygienic importance. As the boards of health are now recognizing the importance of preventative methods in diphtheria, scarlatina and other infectious diseases, we trust the day is not far distant when the subject will receive the attention it deserves, and that the filthy and dangerous habit of promiscuous expectoration will be a violation not only of a hygienic law, but also of a city ordinance.

INFLUENCE OF ODORS ON THE VOICE.

Dr. Joal calls attention to the many cases recorded in medical literature of severe headaces, nervous disturbances and even occasional cases of death, due to the inhalation of the odors of various flowers (*Revue de Laryngologie*). He then states that a number of singers and actors suffer from this, and that usually it is a certain odor which the affected person cannot tolerate. The symptoms set up are usually coryze, hoarseness even to aphonia, headaches, etc. He reports a number of cases, in several of which good results were obtained by cauterization of the hypertrophied mucous membrane.

SYPHILIS OF THE MOUTH.

In a communication read before the Southern California Odontological Society (*Southern Cal. Prac.*), Dr. Granville

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MacGowan points out the importance of promptly recognizing any appearance of syphilis as a self-protection against contagion, and the avoidance of the exposure of his patients to infection, by the use of instruments or dressings.

There are certain lesions which are well marked and distinct, and which, when present, always indicate syphilis. It is important to remember that this infection is frequently non-venereal, and innocently acquired; the victim is frequently unaware of the character of his malady. There are certain cardinal characteristics of syphilis. When occurring upon the skin or mucous membrane, the syphilides are sharply defined, dense and uniform cellular infiltrations of the papillary body and the corium, and differ one from another only in size. The cells are not fitted to undergo permanent organization into connective tissue, but always undergo involution, and disappear by absorption or by purulent degeneration. The syphilitic infiltration always enlarges and disappears in the same direction, centrifugally, hence the peripheral parts are relatively the most recent, and exhibit all the characteristics of the fresh infiltration.

The chancre, when formed in this region, occurs most frequently upon the lips, as an abrasion is not unusual here. Any sore with scant secretion, painless, or moderately so, with a circumscribed indurated base, refusing to heal for weeks, and becoming finally covered with grayish pseudo-membranous patches, is a chancre. Although usually single, it may be multiple from a simultaneous infection. Within the mouth, the most frequent location is the anterior part of the tongue, the tonsils, or the inner surface of the cheek. The diagnosis is more difficult here, as the distinctive characteristics are modified. If a single and insensitive ulcer or fissure upon the anterior surface, persisting for weeks, refusing to heal under application of nitrat of silver, extends continually, develops an indurated base and becomes covered with a pseudo-diphtheretic membrane, it is probably a chancre. An ulcer may develop from a ragged tooth, and is cured by the removal of the cause.

Secondary lesions of syphilis are not so common in the mouth, when proper attention to cleanliness in this region is taken. The changes observed are due to vascular dilation, infiltration of embryonic cells and the fibronous exudates loaded with young cells, and pus corpuscles. The parts most prone to mucus patches are the inner surface of the lips and the angles

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of the mouth. If syphilitic infection is suspected, examine the comisures and glosso-tonsillary folds for mucus patches. This lesion is nearly painless, tends to disappear spontaneously, but to recur indefinitely, and has the modified cercinate forms seen in syphilis elsewhere.

Tertiary syphilis may affect any of the structures entering into the formation of the mouth, but is found most frequently upon the tongue and soft palate, and here it sometimes makes its worst ravages. It may be superficial, but sometimes causes fearful deformities. A gumma is a circumscribed new growth, due to the infection with the virus of syphilis, and consists of small cells closely packed in the anatomical tissues, and present no capability of organization into connective tissue, but tend rapidly, when uninfluenced by treatment, to death disintegration and the formation of excavating ulcers. The ulceration of the soft palate is sometimes very rapid, and to avoid the distressing condition following the invasion of this part, prompt and vigorous treatment is indicated. In all these syphilitic conditions, the treatment should be both local and constitutional.

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BOOK NOTICES.

MICRO-ORGANISMS IN THE HEALTHY NOSE. By St. Clair Thomson, M. D., M. R. C. P., and R. T. Hewlett, M. D., M. R. C. P., London, Royal Medical and Chirurgical Society. H. K. Lewis, 1895.

The authors review the researches which have been made upon the bacteria of the nasal mucus, and they assert that while much has been written upon the bacteria of abnormal conditions of the nose, little has been published upon the bacteria of the healthy nasal mucus. Many writers had promulgated the view that the nose is a septic depository, but the painstaking investigations of the authors proved this to be wholly untrue. They discovered that the vestibule of the nose which is really lined with skin, and the vibrissæ, which are found in the vestibule are abundantly supplied with germs. On the other hand the nasal mucus which is found posterior to the vestibule is almost invariably sterile.

A detailed statement of the experiments made, with method and results accompanies the monograph.

HANDBUCH DER LARYNGOLOGIE UND RHINOLOGIE. Dr. P. Heymann announces the publication of what promises to be a most extensive and scientific treatise of Laryngology and Rhinology, in three volumes. The names of the collaborators insures the scientific and comprehensive character of the work. Among others are to be noted the following: Zuckerkandl, Ewald, Fraenkel, Schech, Stoerk, Krieg, Seifert, Semon, Jurasz, Schmidt, Bruns, Gerhardt, Onodi, Pianiazek, Strubing, Schrotter, Bloch, Chairi, Mikuliez, Gottstein, Schrotter, Hajek and Bergmann.

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ANNALS OF OPHTHALMOLOGY AND OTOLOGY.

TO OUR READERS.

The ANNALS is divided into the following special departments: (1) Annals of Ophthalmology; (2) Annals of Otology; (3) Annals of Laryngology and Rhinology. A fourth division, under the care of Dr. Wendell Reber, will deal with Neurology in so far as it pertains to the subjects included in the other departments. Each department will contain original communications and abstracts of original articles appearing in current medical literature of all countries.

The contents of each department will be classified and indexed. Abstracts will be sufficiently full and complete to enable readers to acquire as thorough an understanding of the subjects as could be obtained by reading the originals. All translations and abstracts will be made by men especially qualified for the work.

The change in dates of publication to the last of January, April, July and October gives time for the latest foreign journals to reach the editorial staff and enables the ANNALS to present all advances up to date. If an issue of the ANNALS be delayed five or ten days subscribers may know that it is for the purpose of including more recent and valuable contributions.

The ANNALS will not be limited in size, but each number will be a handsome book, bound in highly finished linen paper cover.

The following list contains the names of the principal periodicals made use of by each editor in the preparation of abstracts and notices for the current volume of the ANNALS:

DR. CASEY A. WOOD.

Bolletino d'oculista (Florence).
Archivio italiano di oftalmiatria (Naples).
Recueil d'ophtalmologie.
Revue générale d'ophtalmologie.
Archives d'ophtalmologie.
Annali di Ottalmologia (Pavia).

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Moniteur d'ophtalmologie (St. Petersburg).
La Presse médicale belge (Brussels).
Journal de médicine de Paris.
Gazette des hôpitaux (Paris).
L'Union médicale (Paris).
La Sémaine médicale (Paris).
Le Progrès medical (Paris).
Revue de chirurgie (Paris).
Lo Sperimentale (Florence).
Gazetta medica di Roma.
Gazetta degli Ospedali (Milan).
Archivio itialiano di clinica medica (Milan).
Annali di Nevrologia (Naples).

DR. CHARLES H. MAY.

Journal of American Medical Association.
Medical Record.
Annales d'Oculistique. English Edition.
Archives of Ophthalmology.
Maryland Medical Journal.
Medical and Surgical Reporter.
New York Medical Journal.
London Lancet.
Ophthalmic Record.
Boston Medical and Surgical Journal.
Medical News.
Archives of Surgery.
Medical Press.
University Medical magazine.
The Ophthalmic Review.
Transactions of the Ophthalmological Society of the United Kingdom.
Bulletin of the Johns Hopkins Hospital.
Transactions of the American Ophthalmological Society.
American Medico-Surgical Bulletin
The Clinic.
American Journal of Ophthalmology.
The Refractionist.
The Medical Quarterly (England).
Therapeutic Gazette.

DR. H. V. WÜRDEMANN.

Archiv für Ophthalmologie, Graefe.
Archiv für Augenheilkunde, Knapp and Schweigger.
Klinische Monatsblätter für Augenheilkunde.
Centralblatt für praktische Augenheilkunde.
Beiträge zur Augenheilkunde.
Ungarische Beiträge zur Augenheilkunde.
Centralblatt für innere Medicin.

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Archiv für pathologische Anatomie, Physiologie und klinische Medicin.

Centralblatt für Bakteriologie, Parasitenkunde und Infektionskrankheiten.

Zeitschrift für vergleichende Augenheilkunde.

Deutsche medicinische Wochenschrift.

Berliner klinische Wochenschrift.

Wiener klinische Wochenschrift.

Münchner medicinische Wochenschrift.

DR. ALBERT B. HALE.

Revista de Cíencias Medicas (Barcelona, Spain).

El Siglo Medico (Madrid, Spain).

Gazeta Medica, Ciudad de Mexico (Mexico).

CURRENT ENGLISH AND AMERICAN OTOLOGICAL, RHINOLOGICAL AND LARYNGOLOGICAL LITERATURE.

T. Melville Hardie, M. D.
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American Annals of the Deaf.
American Journal of the Medical Sciences, Philadelphia.
American Medico-Surgical Bulletin, New York.
Archives of Otology.
Australian Medical Journal.
Boston Medical and Surgical Journal.
British Medical Journal, London.
Brooklyn Medical Journal.
Canadian Practitioner, Toronto.
Dublin Journal of Medical Sciences.
Edinburgh Medical Journal.
International Clinics, Philadelphia.
Journal of Laryngoloy, Rhinology and Otology.
Journal of Ophthalmology, Otology and Laryngology.
Journal of the American Medical Association.
Lancet, London.
Medical Chronicle, Manchester.
Medical News, New York.
Medical Press and Circular.
Medical Record.
Medicine.
Montreal Medical Journal.
New York Medical Journal.
New York Eye and Ear Infirmary Reports.
North American Practitioner.
Practitioner, London.
Quarterly Journal of Medical Science.
Therapeutic Gazette.
Times and Register.
Transactions of the American Laryngological Association.
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CURRENT FOREIGN OTOLOGICAL, RHINOLOGICAL AND LARYNGOLOGICAL LITERATURE.

H. A. Alderton, M. D.
George Morgenthau, M. D.
W. Scheppegrell, M. D.
Hanau W. Loeb, M. D.

Annales des maladies de l'oreille, du larynx, du nez et du pharynx. Paris.

Archives internationales de laryngologie, de rhinologie et d'otologie. Paris.

Archiv für Laryngologie und Rhinologie.

Archiv für Ohrenheilkunde. Leipzig.

Archiv internacionales de laringologia, otologia y rinologia. Barcelona.

Archivii italiani di laringologia. Naples.

Bolletino delle malattie dell'orecchio, della gola, e del naso. Florence.

Bulletins et memoires de la société française d'otologie et de laryngologie. Paris.

Internationales Centralblatt für Laryngologie, Rhinologie und verwandte Wissenschaften. Berlin.

Monatshefte für Ohrenheilkunde. Berlin.

Monatsschrift für Ohrenheilkunde. Berlin.

Revista de laringologia, otologia y rhinologia. Barcelona.

Revista de patologia e terapia delle malattie della gola, del naso e dell'orecchio. Florence.

Revue hebdomodaire de laryngologie, d'otologie et de rhinologie. Bordeaux.

Revue internationale de rhinologie, d'otologie, de rhinologie et d'ophthalmologie. Paris.

Organ der Taubstummen-Anstalten in Deutschland und den deutschredenden Nachbarländern. Friedburg.

Allgemeiner Wiener medizinische Zeitung. Vienna.

Berliner Klinik. Berlin.

Berliner klinische Wochenschrift. Berlin.

Deutsche Zeitschrift für praktische Medicin. Berlin.

La Medicine moderne. Paris.

La Semaine Medicale. Paris.

L'Union Medicale. Paris.

Lyon Medical. Lyons.

Münchener medicinische Wochenschrift. Munich.

Prager medicinische Wochenschrift. Prague.

Therapeutische Blätter, Vienna.

Therapeutische Monatshefte. Berlin.

Wiener Klinik. Vienna.

Wiener medizinische Wochenschrift. Vienna.

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ANNALS OF OPHTHALMOLOGY AND OTOLOGY.

TITLES OF ORIGINAL ARTICLES IN SPECIAL JOURNALS.

ANNALI DI OTTALMOLOGIA.

ANNO XXIV, FASC. 5, 1895.

A. Antonelli—La correzione ottica degli operate di cataratta. (As. post-operatorio, nuova scotola di lenti per l'exame degli afachici.)
M. Rinaldi—Muturazione della cataratta per mezzo del massagio practicato derettamente sulla Cristalloide. Processo operativo.
A. Bietto—Interno ad un processo di recente proposto pe la cura dello stafiloma irido—corneale totale.
P. Lucianè—Cura dell' oftalmia migratoria colle iniezion isottocongiuntivali ed intraternoniane di sublimato corrosivo.
Id.—L' Ittiolo in alcune forme die mallatie oculari.

ANNO XXIV., FASC. 6, 1896.

XIV. Congresso dell' associazione Oftalmologica Italiana tenuto in Venezia dal 26 al 29 Agosto, 1895.

ANNO XXV., FASCO 1, 1896.

A. Bocchi—Terapia delle procidenze dell' iride.
Boggi—Un caso di spontanea e completa lussazione del cristallino nella camera anteriore. Riduzione col massagio.

ANNALES D'OCULISTIQUE—English Edition.

NOVEMBER, 1895.

D. E. Sulzer—Documents Relative to the History of Cataract Extraction. Historical essay.
A. A. Boyer—The Relative Importance of Labyrinthine and Ocular Defects in the Etiology of Vertigo.
Felix Lagrange—New Method of Making an Artificial Pupil by External Iritomy.
L. Laquer—The Curability of Sympathetic Irido-Choroiditis.
Charles F. Prentice—Why Strong Contra-Generic Lenses of Equal Power Fail to Neutralize Each Other.

RECUEIL D'OPHTALMOLOGIE.

DECEMBRE, 1895.

Trantas—Nouveau procédé opératoire contra le trichiasis avec entropion.
Galezowski—Observations cliniques.
Kopff—Aptitude visuelle pour la marine et l'école navale.

FEVRIER, 1896.

Trantas—De la Conduite a tenír dans le cas de blessure du globe de l'oeil et de la Cavite orbitaíre par des grains de plomb de chasse ou de petit calibre.
Schwarzschild—Sur l'importance des mensuratíons ophtalmometriques.
Chauvel—Etudes ophtalmologiques (suite). Traumatismes de l'oeil.

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Armaignac—Iritis syphilitique unilaterale avec gomme de l'iris = Guerison avec restitution complete de la vision.
Chauvel—Etudes ophtalmologiques (suite et fin) Trautisme de l'oeil.
Saruch—La statistique de la clinique ophtalmologique nationale de Kalaun et la conjunctivite pseudo—membraneuse en Egypt.

JANVIER, 1896.

Galezowski—De l'hérédité syphilitique oculaire a la deuxiéme generation.
Malgat—Immunite trachomateuse—Le trachome monoculaire.
S. Samch—La conjunctivite pseudo—membraneuse et ses formes cliniques en Egypt.

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Untersuchungen zur Lehre vom Farbensinn. Von Dr. W. Koster.
Ueber die Sensibilität der Hornhaut. Von Dr. Emil Kruckmann.
Ueber experimentelles Glaukom beim Kaninchen und über die Bedeutung des Kammerwinkels für den intraocularen Druck. Von Dr. Chr. F. Bentzen.
Ein Beitrag zur Anatomie entzündlichen Glaukom. Von Dr. Eduard Zirm.
Unter welchen Umständen erscheinen Doppelbilder ungleichem Abstande vom Beobachter? Von Dr. Richard Fröhlich.
Zur pathologischen Anatomie der Skleritis und Episkleritis. Von Prof. Otto Schirmer.
Anatomische Untersuchung eines Falles von Retinitis Pigmentosa. Von Dr. O. Bürstenbinder.
Ueber die Bildung cystenartiger Hohlräume im Gebiete der Retina. Von Prof. Francesco Falchi.
Ueber Episkleritis Periodica fugax. Von Prof. Dr. Ernst Fuchs.
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Apotomia iridis von Prof. Wilhelm Schulek.
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Der Pacquelin'sche Thermocauter in der Augenheilkunde von Dr. Stephen Csapodi.
Hermetischer Schutz gesunder Augen von Dr. Ladislaus Issekutz.
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Ueber den Werth dreier antiseptischer Mittel in der Augenheilkunde, von Dr. Gustav Neupauer.
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Zur Operation des Pterygiums von Prof. Wilhelm Schulek.
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Die Indicationen der Enucleation des Augapfels von Dr. Emil Grosz.
Die Erythropsie von Prof. Wilhelm Schulek.
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Starextractionen der Budapester Augenklink in den Schuljahren 1877-78 und 1878-79 von Dr. Ludwig Juhász.
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Ueber eine neue Methode der Entfernung des grauen Stares von Prof. Wilh. Schulek.
Instrumente zur Staraustreibung von Prof. Wilhelm Schulek.
Versuche über den Hornhautschnitt von Prof. Wilhelm Schulek.
Staraustreibung mittelst concav gestutztem Lappenschnitt und rund erhaltener Pupille von Prof. Wilhelm Schulek.
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Lichtwitz—Complications des empyèmes des cavités accessoires du nez.
A. Courtade—Modifications à la technique opératoire de la perforation de l'apophyse mastoïde.
A. Courtade—Mastoïdite à épanchement séro-muqueux; evacuation par compression de l'air dans le conduit auditif.
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ANNALS
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OPHTHALMOLOGY
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OTOLOGY.

VOL. V. APRIL, 1896. No. 2.

THE SHADOW AND CERTAIN CONDITIONS OF ACCURACY IN SKIASCOPY.

BY EDWARD JACKSON, A. M., M. D.,
OF PHILADELPHIA.

PROFESSOR OF DISEASES OF THE EYE IN THE PHILADELPHIA POLYCLINIC.

THE number of the factors that take part in the formation of the shaded area in the patient's pupil commonly spoken of as the shadow, and the varying share which they take in that formation in different eyes and under different conditions in the same eye, makes the subject somewhat complex and difficult to understand. Writers on skiascopy have hitherto, with a few exceptions, contented themselves with a somewhat crude outline of its optical theory and some attention to certain more important details of its practical application. As these become better understood points of less practical importance will claim attention.

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One of these points, of which there should be a better understanding, is the formation of the shadow. A factor in this is the shadow of the observer's iris limiting the diffusion circles formed on the retina when the point of reversal is too near the observer's eye to allow of his focussing the rays coming from the patient's retina. This has been discussed by Dr. Carl Weiland in the *Medical News*, October 12, 1895. His demonstration regarding it constitutes an addition of real value to the literature of skiascopy. But it has not the primary and general importance that he seems to attach to it; and what he puts forward as "important points usually overlooked, or even entirely misunderstood, not only by the practicing skiascopist, but also by authoritative writers" challenge the radical criticism here offered.

His first point is the dogmatic assertion that in practicing skiascopy "the observer must keep his eyes accommodated for the pupil of the patient." In practicing skiascopy one wishes to see as clearly as possible the movements of light and shade in the patient's pupil, and no student of the subject needs to be told that perfect focussing of the thing looked at is essential to the best vision. From near the point of reversal the pupillary margin may be the only definite thing about the pupil to be focussed. But the statement that the observer *must* accommodate for the pupil of the patient, if intended to have the same force as the statement that he must correct his ametropia and relax his accommodation when measuring refraction by the direct method with the ophthalmoscope, is not correct.

When from the observed eye, or the lens before it, the rays of light emerge divergent the observer will naturally (and should) accommodate, not for the patient's pupil, but for the erect virtual image behind the eye from which these rays appear to come; and when they emerge so convergent as to form an erect aerial image far enough in front of the observer to allow him readily to accommodate for it, he will (and should) do so. Again, when the observer is seeking to bring out most distinctly the band-like appearance of

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regular astigmatism he will naturally (and properly) accommodate for the divergence of the rays in the meridian perpendicular to the band, and not for the patient's pupil. In short the student of skiascopy, in the effort to see most clearly the movements he has to watch, will properly adjust his accommodation to the varying needs of the test, without any special instruction on this point, if only he be not misinformed and wrongly directed.

Dr. Weiland thinks it strange that "no allusion is made to this very important condition of accuracy in the recent monograph by Jackson." It might with equal force be urged that no allusion has been made to the absolute necessity for the skiascopist to keep open his own eye and to direct its visual line toward the eye of the patient. These are quite as important as the other, and as likely to be overlooked. The description of something to be seen, and especially a description indicating that it is not always easy to see, implies the need for the optical adjustment of the eye of the observer to the ordinary conditions of accurate vision; and for the practice of skiascopy no other optical adjustment of the observer's eye is needed.

Another of Dr. Weiland's points is: "The light-area has then (with the observer's eye accommodated for the patient's pupil) exactly the shape of the patient's pupil, round or otherwise, as the case may be, and remains perfectly stationary throughout the test. The shadow alone moves." This seems to mean that by light-area Dr. Weiland understands the illuminated pupil of the patient, or its projection on the observer's retina. I use the term light-area, and understand other writers on skiascopy to use it to indicate the luminous *part* of the pupil, while the shadow in this connection means the non-luminous part of the pupil. Of these, as watched in the shadow test, it cannot properly be said that one moves and the other does not. Strictly speaking, what is seen to move is the boundary between light and shadow. So long as the whole pupil is occupied by light-area, or so long as it is wholly occupied by shadow, no motion can be perceived. Only when a portion of the

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pupil is light-area and a part of it is shadow is motion perceptible; and then it is the boundary separating light from shadow that is seen to move.

Again it is asserted: "The shadow is produced by the iris of the observer." Under the conditions assumed for Dr. Weiland's demonstration this is true. But it is not true of all the conditions that arise in the ordinary clinical use of skiascopy; and even for the limited case of which it is true it is not the only way of expressing the truth. Dr. Weiland is seriously in error in criticising Nettleship, Swanzy, Noyes, Hartridge, Parent and myself for directing attention to a different phase of the phenomenon in question; for this other phase is more general and more intimately related to the essential practical facts of skiascopy. To illustrate: As I sit by my lamp a shadow falls upon the floor. It is proper to say that my body produces that shadow, as Dr. Weiland says that the iris of the observer produces the shadow on his retina. But it is also proper, also good English, to say that the lamp flame throws the shadow on the floor. We speak of the shadows cast by the sun, the moon, the peculiar shadows of the arc light, etc., and in the same sense it is proper to speak of the shadow on the observer's retina as being thrown there by the light area on the patient's retina Even if this latter mode of expression be considered inferior, its employment is not sufficient ground for supposing ignorance or misunderstanding of the phenomena alluded to on the part of the user. If my lamp be moved back and forth, while I sit still, the shadow on the floor is seen to move. In this I remain passive, the movement of the shadow is directly dependent on the movement of the lamp. In a manner precisely similar, in the case we are discussing, the observer's iris remains stationary and the movement of shadow on his retina is directly dependent on the movement of light on the patient's retina. Even in the particular case assumed by Dr. Weiland the existence and movement of the shadow on the observer's retina are dependent directly and actively on the existence and movement of the boundary of the light-area on the

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patient's retina. And when, under conditions differing from those assumed by Dr. Weiland, the observer's eye is focussed, not for the patient's pupil, but for the erect or inverted image of the patient's retina, the observer's iris has nothing to do with the shadow on his retina, while the boundary of the light-area on the patient's retina preserves its essential relation to that shadow and its movement.

Another proposition is: "The usual crescentic shape of the shadow has its cause in the usual circular form of the pupil of both patient and observer." This, too, is true only for the limited conditions assumed by Dr. Weiland when the light-area is a diffusion area produced by rays from a single luminous point of the retina, the pencil being limited by one or both of the circular openings, the pupils of the patient and the observer. When, however, the source of light is not a single luminous point, but composed of many such points constituting a luminous area, and in skiascopy it is never a single luminous point, but is always an area of considerable size, the diffusion area of each luminous point is overlapped by the diffusion areas due to other luminous points, and the resultant light-area takes a shape between that of the area that serves as the source of light and that of the single diffusion area. At the same time the overlapping of diffusion areas belonging to illuminated points by the diffusion areas of neighboring non-luminous points causes the margin of the light-area to become indefinite and to show a gradual transition from light to darkness. Hence it happens that the form of the light-area on the observer's retina, the form of the apparent light-area in the patient's pupil, never corresponds exactly to the form of the diffusion area as demonstrated by Dr. Weiland, but is at all times somewhat due to the form of the light-area on the patient's retina. As the point of reversal is approached the influence of the shape of the diffusion area increases; as the point of reversal is departed from the influence of the shape of the diffusion area diminishes. When the observer's eye comes to be focussed on the erect or inverted image of the patient's retina the influ-

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ence of the form of the diffusion area is entirely eliminated, and when in addition the rays from the source of light are accurately focussed upon the retina of the patient the form of the light-area in the patient's pupil is entirely independent of the form of the patient's or the observer's pupil, and is dependent wholly on the form and size of the source of light, the refraction of the patient's eye as to aberration and astigmatism, and the distance of the observer from the point of reversal.

As Weiland observes in a foot-note, when the observer's pupil is larger than the sight-hole in his mirror it is the latter that limits the pencil of rays and shapes the diffusion area, and the observer's pupil does not enter into the matter at all. Practically this is always the case. This being the case it is easy for one to determine by experiment that the sight-hole may, under certain circumstances, influence somewhat the form of the shadow, but that this influence is of very little practical importance. To do this take a piece of looking-glass and make a skiascopic mirror of it by scraping away the silvering so as to make a square or triangular sight-hole, which may be larger than would be proper for the ordinary practice of skiascopy, but which must be kept within the limits of the observer's pupil. Then compare the form of the shadows seen through this sight-hole with those seen through the ordinary circular sight-hole. At most distances from the point of reversal, and for some eyes at all distances, the form of the light-area will be the same through both openings. But in other eyes, when close to the point of reversal, one can see through the angular sight-hole a slightly angular light-area and shadow.

Named in the order of their usual practical importance, the factors which determine the form of the light-area and shadow in the pupil are: (1) The refraction of the eye, especially regular and irregular astigmatism and aberration taken in connection with the distance of the observer from the point of reversal; (2) the form and size of the source of light employed; (3) the form of the patient's pupil and of the sight-hole of the mirror.

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Finally, Weiland states: "Skiascopy is the more accurate the larger the pupil of the patient (provided there is not much aberration in the peripheral zone) and the smaller the pupil of the observer." This is substantially correct; only one must remember that the periphery of the fully dilated pupil always does present enough aberration and irregular astigmatism to destroy its value in this connection, and that it is the sight-hole in the mirror and not the pupil of the observer that limits the diffusion circles on the observer's retina. Years ago I pointed out that: "It is the matter of the sight-hole that really limits the exactness possible with the shadow-test." (*Ophthalmic Review*, 1890). It does this not only in the way Dr. Weiland has indicated, but also by causing the feeble illumination or non-illumination of the most important part of the patient's retina, and by its circles of diffusion still farther diminishing the contrast of light and shadow. But we must have a sight-hole, and one large enough to let us watch the movements of light and shadow in the pupil and on the patient's face. I find one about *two millimeters* in diameter most generally satisfactory. The darker the room in which skiascopy is practiced and the freer the sight-hole is from reflections, or points of light diffusion, the smaller it may be. Fortunately the size mentioned is small enough to allow accuracy of the test sufficient for all practical purposes.

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ACQUIRED AMBLYOPIA.

By Matthias Lanckton Foster, M. D.,
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ASSISTANT SURGEON TO THE MANHATTAN EYE AND EAR HOSPITAL.

OCCASIONALLY a patient appears in the office or in the clinic whose vision, in one or both eyes, is far below the normal standard and cannot be improved by glasses, while at the same time no cause can be detected in the eye to explain the lowered vision. This condition is known as amblyopia. When no reliable evidence of previously good vision is furnished and there are no accompanying symptoms referable to retro-bulbar trouble or hysteria the amblyopia is usually considered congenital. It very rarely happens that a manifestly acquired amblyopia appears with no accompanying symptoms to indicate its origin, and I therefore think the following case will prove of interest:

A young man 20 years of age consulted me in September, 1892, to have his eyes examined preparatory to entrance into the Massachusetts Institute of Technology. At that time the vision of each eye was $\frac{20}{15}$; there was no astigmatism, manifest hypermetropia, or muscular insufficiency, and only one diopter of latent hypermetropia. His only ocular trouble was a certain amount of chronic conjunctivitis. He became an indefatigable student in the Institute and in the following April returned to me with this history: One night, during January, he passed from 8 p. m. to 7 a. m. doing some very fine mechanical drawing. He was then seized with a pain in his right eye which radiated back-

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ward and down into the neck. This pain persisted and about March a less amount of pain appeared in the left eye. His description of this pain was that after reading a while he had a "drawing sensation in both eyes, more marked in the right, as though they would fall out." At the time of his second visit to me, April 1893, the vision of his right eye was reduced to $\frac{20}{80}$, while that of the left was as before, $\frac{20}{15}$. No improvement of the vision of the right eye could be obtained with glasses, the refractive condition was the same as formerly and nothing could be found within the eye to furnish the slightest explanation of the loss of vision. The tension of the eyeball was normal, the pupils were equal in size and not dilated, and the field of vision was perfect. There was red-green blindness of both eyes, of which the patient stated that he had been aware for several years.

This patient I took in consultation to two other ophthalmologists, Drs. David Webster and S. M. Payne, and to a neurologist, Dr. J. Leonard Corning, but nothing was elucidated to explain the amblyopia. Dr. Webster assured me that but for my examination of the eye a few months previously he would have had no hesitancy in pronouncing it a case of congenital amblyopia. The patient's general condition at this time was not very good. He was suffering from the results of several month's intense application and overwork without proper recreation and rest. To meet this indication chlorid of gold was prescribed as a tonic and a pair of +1D. glasses ordered for use when reading.

I have seen the patient since then at intervals of several months and noticed a very slight gradual improvement. At no time has it been worse than at the previous examination. In August 1895 the vision was $\frac{20}{40}+$. The refractive and ophthalmoscopic condition still remained the same.

Acute glaucoma, or inflammation of any portion of the eye, which may be suggested by the history of severe pain and lowered vision, is certainly excluded by the perfect field, normal tension and absence of abnormal pupillary and ophthalmoscopic appearances.

We have, then, a case of amblyopia which is known not to have been in existence four months previous to an unusual and abnormal tax upon the faculty of vision and which was noticed subsequent to this unusual and abnormal

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tax. It was and is accompanied by no associated symptom except that of pain radiating from the eye for a few months after this occurrence, and has very slowly improved up to the present time. What may be the cause of the amblyopia is an interesting subject for speculation.

Two theories can be advanced to account for its origin; one that it was caused by a change in the nerve elements at some part of the visual tract induced by the severe and prolonged strain to which the eyes were subjected, the other that it is caused by hysteria. In regard to the first theory I think the location of a possible change in the nerve elements may be narrowed by exclusion to a single point in the optic tract and that, if I show this to be true, this fact shows the theory worthy of consideration, while in regard to the second I think it will appeal to many as the probably correct one, because I am unable to positively exclude hysteria, if indeed hysteria may admit of positive exclusion in any case.

A nervous impulse is supposed to be transmitted through a nerve by a molecular disturbance propagated from point to point along its course. A moderate stimulus increases the irritability of a nerve, but repetition of the stimulus for a length of time induces exhaustion shown by a lowering or a loss of irritability. According to Bernstein, quoted by Thacher, the nerve is exhausted more slowly than the muscle, and recuperates more slowly. When a tetanizing current of electricity is applied to a portion of a nerve until exhaustion ensues, the irritability returns much later at the point of stimulation than elsewhere. The stimulus which induces the transmission of nervous impulses through the optic nerve is the impingment of rays of light upon the retina, and especially upon that portion known as the fovea centralis. If this stimulus is applied continually for a sufficient length of time to a single point, the irritability of the nerve may confidently be expected to be lessened, and the transmission of nervous impulses interfered with, particularly from that point.

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The use of the eye for eleven consecutive hours at fine mechanical drawing necessitated the application of a constant, active stimulus to the optic nerve, impinging upon the fovea centralis, and after this there was found an inability on the part of the nerve to transmit, or of the brain to receive, nerve impulses generated by as moderate an amount of stimulus as before. This it seems to me may be fairly termed a state of exhaustion. As this state has improved but slightly in nearly three years, the molecular disturbance which characterizes exhaustion may have been of a more permanent character than usual. This molecular change would seem likely to be greatest at one end or the other of the nerve tract, because at these points would probably be the greatest resistance to the transmission of the nerve impulses. Gray matter is more highly organized and delicate than white, hence it is natural to turn first to this in search of a possible lesion. But, if such a molecular change were to take place in the visual center in the cuneus, the nerve fibers leading thence to both eyes would probably be affected and the blurring of vision would be binocular and hemianopic. Even if we conceive of this molecular change as affecting fibers which pass from the center to one eye alone, the resulting affection of vision would still be hemianopic in character because the fibers entering the eye from the other cuneus would not be affected. Again a lesion either in the cortex or in the course of the nerve, which could reduce central vision to such an extent, would, of necessity, as it seems to me, reduce the acuity of peripheral vision, and, as this is very slight in the outermost parts of the field, would also cause a narrowing of the field of vision. But in this case there was no trace of hemianopsia or narrowness of the field of vision, and the possibility of a lesion in the cortex or in the optic nerve proper is thus excluded. The retina alone of the optic tract remains to be considered. No scotoma or dulling of vision was detected in any part of the field except the central area, and this limits the situation of the possible lesion to one point, the fovea centralis, upon which

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the stimulus of focussed rays of light from observed objects directly impinge This point is the most sensitive of the retina; its tissues are most delicate and highly organized, and specially adapted for the reception of focussed rays. It is necessarily in constant irritation while attention is closely and continuously directed to the appearance of small objects. According to the quotation just made from Bernstein the irritability of an exhausted nerve returns much later at the point of stimulation than elsewhere. If this is true of other nerves I know of no reason why it should not be true of nerves of special sense, and we must consider whether it is possible or not that hyperstimulation may have obtunded the sensitiveness of the nerve elements supplying the fovea centralis, and so produced a central amblyopia.

I present this hypothesis for consideration with the utmost diffidence because I am aware that I am reasoning from analogy, a most delusive form of logical process which has occasioned many errors and cannot be conclusive. I have not found it advanced heretofore, neither have I found any record of experiments upon the optic nerve which would confirm it, but it appears to me both logical and possible.

Although both eyes were subjected equally to the active stimulation it is perfectly in accord with analagous processes elsewhere in the body that the nerve elements in one fovea should recover their irritability readily after a strain which might obtund the sensibility of the corresponding elements in the other fovea. In other words, the molecular disturbance characteristic of exhaustion might be temporary in one place though permanent in the other, and then monocular amblyopia would be produced. When the sensitiveness of the nerve elements at the fovea is abolished from any cause, central vision is abolished and a central scotoma can be detected, but if this sensitiveness were only lowered central vision would remain though of reduced acuity, and unless the acuity were reduced below that of the retina immediately surrounding the fovea, a scotoma could not be

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detected. As the nerve elements of the rest of the retina would be unaffected the field would remain normal. There would not be likely to be any trace of hemianopsia, or of hemiamblyopia, or any change in the fundus which could be observed with the ophthalmoscope, and there would be no abnormality in the reflexes of the eye because the lesion would be too slight to affect them.

These conditions are exactly the ones present in this case, and the improvement in vision which I have noticed during two and a half years has been steady though slight, not varying from time to time in the sense of being worse occasionally.

As I said before, the diagnosis of hysterical amblyopia cannot be excluded. The red-green blindness would be a strong point in favor of this diagnosis if it had appeared coincidently with the amblyopia, but I am convinced that the patient spoke truly when he assured me that he had never been able to distinguish these colors. As far as I know there were no other symptoms suggestive of hysteria. At the time of his examination Dr. Corning detected no hysterical symptoms, and, though he persisted in his studies, at no time, to my knowledge, did any symptoms develop which were referable to hysteria.

For these reasons I advance the opinion, not positively but rather tentatively, that the amblyopia in this case was due to exhaustion of the nerve elements at the fovea centralis.

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PLASTIC CYCLITIS, WITH LOCALIZED EXUDATION, OCCURRING IN EARLY SECONDARY SYPHILIS, AND RESEMBLING GUMMA OF THE CILIARY BODY.

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IT had not been my fortune, prior to the observation of the following case, to see a lesion resembling gumma occurring in any part of the body in the earlier stages of syphilis.

The patient, a young man 28 years of age, came under my care in November, 1895, through the kindness of Dr. J. E. Black. He had always enjoyed good health, with the exception of the loss of a leg by accident two or three years ago. He recovered promptly from the amputation, and has had no further illness of any kind until the present.

In August, 1895, he contracted syphilis. Though not seen by Dr. Black at this time, there can be no doubt of the nature of the lesion from the history of its development and appearance, and subsequent course. When I saw him about nine or ten weeks after the primary sore, he had a well-marked papulo-squamous syphilide, affecting the arms and legs principally, the trunk moderately and the face slightly, with general lymphatic enlargement. The left eye was the seat of a violent plastic iridocyclitis. The iris was greenish and the aqueous so cloudy as to prevent a clear view of the pupil. On the outer edge of the pupil there

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was a circumscribed plastic exudation on the iris, of dirty white color, and having very much the appearance of gumma of the iris. The eye was intensely injected, tender and painful, especially at night. He had received no treatment. Hot applications and aelopia were ordered for the eye, and mercurial inunctions begun at once. The artificial leech was applied to the left temple almost daily. Three days after my first visit several small nodules, similar to the one mentioned above, appeared on the iris toward the periphery, touching the cornea, and extending into the recesses of the anterior chamber under the projecting rim of sclera. The eye began to clear slowly, though continuing painful. A week after I first saw him the tension was elevated, and the pain, which was considerable, radiated to the temple and forehead in the manner so characteristic of the pain of increased intra-ocular tension. Paracentesis was done under the usual antiseptic precautions, and was followed by a hemorrhage into the anterior chamber, and the extrusion of a greater amount of plastic material from the angle of the anterior chamber, than one would think could lodge there. The leech was applied after the tapping, and the patient spent a comfortable night. The relief was permanent, pain requiring no further treatment. Three days later the aqueous humor had become clear of blood and lymph, and the pupil could be seen to be blocked with lymph, the adhesions being too firm for the mydriatic to effect. There was noticed at this time a low, smooth swelling in the ciliary region above, involving about one-fourth of the ciliary zone and extending 6 *mm.* back into the sclera, where it faded away. This swelling was under the sclera, and seemed to be the focus of inflammation, the injection passing away everywhere but in its vicinity. A compression bandage was applied, and treatment continued as before. The swelling increased, becoming in a few days quite prominent, and a little larger in both vertical and horizontal diameters. There was no exacerbation of pain or inflammation, or increase of intra-ocular tension. The tension slowly subsided, but not till the end of December did the ciliary region assume its normal contour. At that time I noted the eye almost free from redness, the iris of natural color (blue) and occlusion of the pupil by a delicate plastic membrane, holding the iris firmly all around. Above the cornea, a transparent looking arc, in the sclera, followed the course of the ciliary body where the tumor had been, the usual appearance after absorp-

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tion of a ciliary gumma. The tension was a little elevated; light projection and perception good; vision reduced to the perception of moving objects.

The patient left the city in January with the condition of the eye unchanged. He was given a pill of blue mass and sulphat of iron and told to stop the inunctions. I did not consider any attempt at the formation of an artificial pupil justifiable—not so soon, at any rate.

Judging of the condition of affairs in the ciliary body by the probably analagous condition in the iris, there was a circumscribed plastic cyclitis. The masses in the anterior chamber and on the iris were exudations and not gummata, for they shifted their positions much and readily when the aqueous humor was evacuated. Clinically, the appearance was exactly that of a gumma of the ciliary body.

From the character of the eruption the syphilis was of a severe type. When dismissed, the patient's extremities showed, by "boiled ham" colored spots, the extent of the distribution of the syphilide. The papulo-squamous features were gone, each spot being slightly depressed below the level of the skin.

Gumma is put down as a lesion of tertiary syphilis. [1] Noyes describes a form of plastic cyclitis occurring in syphilis which tallies exactly with the features presented by this case, but he does not say in what stage of the disease this form of cyclitis occurs.

[1] Genito-Urinary Diseases, with Syphilis.—E. L. Keyes.

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FUNCTIONAL NERVOUS AFFECTIONS ARISING FROM OPTICAL DEFECTS.*

By Dr. A. W. Elmer,
of Davenport, Iowa.

THERE is serious doubt in the minds of many pathologists as to whether there exists such a thing as a functional affection, properly so called. It is possible that there would be none such if our power of observation were more complete. There may be subtle changes in the minute structures of organs—changes which are molecular in character and which the microscope is unable to reveal.

For want of a better name there are certain phenomena that are termed "functional" which it is not possible to ascribe to any observable lesion, either in the organ affected or in those connected with it.

In many of these cases a cause can be traced, the removal of which, when possible, effects certain relief. These causes may exist in conditions not considered pathological and may be found in parts of the body remote from the seat of the affection. Such affection may rightly be termed "functional," but the term would rightfully be applied to a very limited number of the cases now considered under this head, were all the facts known.

To be purely functional, an affection must depend upon causes which are known not to be pathological, but how we are to know how many causes there are which may enter into these cases as factors is a problem still unsolved.

The traditional camel's back was broken by the last straw; the source of irritation found in the functional

*Read before the Iowa State Medical Society.

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affection may have been this straw, but at the same time be only one of many factors, the sum of which has produced the disturbance.

This view of the matter would seem the more reasonable when we see that the same irritation in another subject produces no like disturbance, even where it is intensified many fold.

In all those cases there must exist two conditions: First, a temperament susceptible to reflex irritation (in other words neuropathic); secondly, a point of irritation of sufficient potency to produce, either alone or in combination with other factors, the effect noted.

Whether this condition of susceptibility may be considered a disease or not must determine the classification of many, perhaps all, of these obscure affections. Whatever name we give to these affections, however, they still retain their importance, and their relief is of as much benefit to the sufferer, whatever view the physician may take of it.

The influence of optical defects upon these cases has for a long time been recognized by the profession, and much has been written upon the subject, so much, in fact, that we can hardly hope to advance much, if anything, that is new. It does no harm, however, to review the subject, and though all that we can say may have been better said before, it will still have its use in stimulating fresh thought upon the subject and attracting the attention of those not formerly interested.

Case I. In the fall of 1886 the writer was consulted by a young man, John Langfitt, 20 years of age. He declared that he had "granular lids" and wanted something for them. He stated that he had had his eyes treated for "granular lids" for four years, his trouble having begun while at Business College in our city. Incidentally, he said that he had curious fainting spells—that he sometimes fell from his horse while on his way to school. He was teaching a country school at the time, but did not refer his trouble in any way to his eyes. He was often attacked with dizziness and headache, and seemed to lose consciousness at times. He had consulted physicians about his

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trouble, but had never been relieved. On inquiry his family history was found to be good. His parents were living and well, and he had several brothers and sisters all in good health. His mother, however, and one sister were of markedly neurasthenic disposition. The attacks of which he complained had not been of long duration, but were growing continually worse. He was carefully examined; his kidneys and other organs were found to be in normal condition, and the "granular lids" proved to be a slight conjunctivitis. When the eyes were examined the ophthalmoscope revealed a high degree of refraction error, together with the flannel-red eye ground so often seen in cases of eye strain. Vision was 20/XL in each eye. He was advised to wear glasses and was assured that they would relieve his "granular lids" as well as his headaches. He demurred for considerable time, but gave a reluctant consent when told that nothing else could be done for him.

Under atropin his correction was found to be as follows:

O. D. + 4.00 S. ⊃ × .90C. ax. .90 V. = 20/xx.
O. S. + 5.00 S. ⊃ + .90C. ax. .90 V. = 20/xx.

Patient began wearing the glasses, finding immediate relief from headache. He remained under observation for about five years, and during this time never had a return of any of the symptoms above mentioned.

Case II. Miss M. O., 21 years of age, came for consultation March 5, 1895, by the advice of Dr. J. P. Crawford. Patient was a robust, healthy girl, at the time working in a woollen mill, doing some fine work about looms. Her history was a rather alarming one; she had severe and prolonged headaches, lasting from one day to another and becoming much worse of late. At times she seemed to lose control of herself—did strange things and rambled in her talk. She would recover and have no recollection of what had taken place during the lapse. Her difficulties were most severe when most confined to her work. Her family history was bad. A brother had died insane and her father had been "queer." The girl's mother was much alarmed and expressed her fears that the daughter was going insane. Some time before consultation, having considerable pain about the eyes as well as failing vision, she went to a drug store and was fitted with glasses which she said gave relief for a time.

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This became a matter of surprise subsequently when her refraction was ascertained. Vision in both eyes was 20/L, the same with her glasses, which were — 1.25 S. Correction under atropin was found to be as follows:

O. D. + 2.50 S. ⊃ + 1.75 C. ax. 75°, V. 20/xxx

O. S. + 2.50 S. ⊃ + 1.75 C. ax. 105°, V. 20/xxx

which would read, when her other correction was taken into consideration,

O. D. + 3.75 S. ⊃ + 1.75 C. ax. 75°.

O. S. + 3.75 S. ⊃ + 1.75 C. ax. 105°.

No other treatment was advised but the wearing of the glasses. The patient has been seen several times since and there has been no return of the nervous or other troubles, though she has gone back to the mill and has continued her duties there since the fitting of the glasses.

Case III. Miss C. O., 19 years of age, complained of headaches and peculiar nervous symptoms, the most prominent of which were sundry jerking and jumping movements of the limbs and muscles. During examination patient's limbs were thrown about, not violently, but much like the movements of a restless person who had become tired of sitting and wished to change position. The mother said she was very much worse at times and had been afflicted with "St. Vitus' Dance" since she was a child. Her vision was 20/xxx in each eye, which, under the atropin, was raised to 20/xx in each eye with a + .50 cyl. ax 180°.

These glasses were prescribed and patient went home to a small town thirty miles distant. She returned in about a year to have her glasses repaired, stating that she had no more headaches and that the nervous symptoms had entirely disappeared.

Case IV. R. D., a young woman 21 years of age, seamstress by occupation. She gave a history of peculiar fainting fits for many years back. Walking on the street at times she would be taken with a "numbing coldness" creeping from the extremities and producing "paralysis" so that she could not walk and would have to be carried, or would have to continue on her way with much difficulty. Of late the attacks had become much worse,

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some family trouble and continued work seeming to aggravate her trouble. She finally consented to have her eyes examined, as she had considerable headache, with the other nervous symptoms. She had just recovered from an attack in which she lost consciousness and there were convulsions preceding the unconsciousness, though not of a very severe character. The ophthalmoscope showed considerable congestion of retinæ and nerves, but both fundi were in other respects perfectly normal in appearance. Vision in both eyes 20/LX. Corrected under atropin.

O. D. + 75 S. ⊂ + .50 C. ax. 90° V. = 20/xx.

O. S. + 75 S. ⊂ + .50 C. ax. 90° V. = 20/xx.

V. with both eyes 20/xv. She was advised to wear her glasses continually and to work as little by artificial light as possible. She was not much improved at first, but after the lapse of a month she had no more headache, and the faintness, convulsions, numbness and other symptoms of a nervous character entirely ceased.

These four cases have been selected because they seemed to illustrate the relation between the defective vision and consequent eye strain and certain functional nervous disorders.

Throughout the whole subject of physiology there is no part so interesting or so important as the subject of reflexes. The central nervous system, so closely connected with every organ in the body, only awaits a certain amount of stimulation along some afferent nerve in order to act along efferent paths, either mildly or with the force of an explosion. Just as a Leyden jar may give a shock sufficient to knock down a strong man, or carefully discharged, may produce only a stimulating effect.

In the normal state we see the natural and vital function of the body carried on reflexly. In what we may call a semi-normal state we see peripheric irritation heaped up within the central nervous organ and resulting in an explosive sneeze or cough. In pathological conditions we see the results of irritation acting reflexly and resulting either in an explosion, as in an epileptic fit of mild or severe form, or in the slower and more constant form of headaches, dyspepsia, migraine, etc.

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In the first instance the afferent stimulation is well known; in the last it is the duty of the physician to search it out and eliminate it—a duty very beautiful and easy in theory, but another matter in practice.

Beyond a doubt the most delicate organ of the body is the eye. There is no organ of the body that contains nerves of so sensitive a character, or more closely connected with the central nervous system. At the same time we know there is no organ that is more subject to strain than a defective eye, especially if it is hyperopic in refraction.

The other organs of the special senses are passive and little subject to strain; likewise is the normal eye passive when looking at objects at or beyond twenty feet, but the hyperopic and astigmatic eye is never at rest. It must be in a state of constant tension of a varying degree in order to obtain clear vision, and the result must be strain and irritation of a very aggravating character, just such as are required to set up reflex disturbances.

With these facts before us it would appear but reasonable to look to the eye first in all cases where we have reason to suspect nervous trouble to be functional.

In the cases given, whatever the diagnosis, the relief was certain. In case I we find rather an unusual amount of defect to have been so long unobserved or unsuspected. The fainting fits were so much like epilepsy of the minor variety that his parents had reasons to fear he would become epileptic, and is it not possible he would have become such had the remedy not been found?

In this case there was more strain upon the eyes for distance than there would be upon the emmetropic eye for reading or any close work. For close work more than half as much more effort than would be required by the ordinary eye.

How many horses are there, that, given an ordinary load, would be able to have it doubled and not break down? In cases where the patient has no neuropathic disposition, or whose use of the eyes is chiefly for distance, no trouble

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arises from these defects more than an occasional headache from unwonted close work, or failing vision when presbyopia comes on, as it always does in these cases at an early age.

In case II we have a considerable hyperopic astigmatism, increased by wearing concave lenses, and a consequent strain so great that the patient was breaking down mentally as well as physically. It seems curious that the concave glasses should appear to the patient to give relief when the symptoms of strain were increased by them at the start. It shows, however, how much mental impression will influence a patient, even against his own sensations, and makes the success of Christian science, magnetic healing and other fads of like kind little to be wondered at.

There can be but little doubt that Miss O. would have been acutely insane in a short time had not this strain been removed. Her family history and symptoms at the time certainly seemed to warrant it.

Cases III and IV show much less optical defect, but in these cases the neuropathic condition was evidently in inverse proportion. It is certain the choreic symptoms in the one and the hystero-epileptic in the other disappeared under correction of the optical defects. How many other factors may have entered into the exciting cause cannot be known, but the removal of the one restored the equilibrium, and with returning health the other factors will be doubtless eliminated so that even a correction of the refraction may not be necessary to health in the future. Had it been possible to eliminate any of the other causes, if there were any, the results would have been the same if the amount of irritation removed were sufficient to restore equilibrium.

These cases are not given because they are considered unique or uncommon. Every oculist has in his records hundreds of cases illustrating the influence of eye strain upon these neuropathic patients.

At present too little attention is paid to the eye and its possible connection with these functional affections. All functional nervous troubles, of course, can not be referred to eye strain. In fact, only a very small per cent is due

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solely to this cause, yet it may have its influence in a large number of cases.

Ranney in his work on Nervous Diseases gives sixteen cases of epilepsy, only two of which are emmetropic. Eight of these were hyperopic and all but one had heterophoria of a greater or less degree. Much the same condition would be found in other functional nervous troubles, without doubt, and a correction of these anomalies would be of vast importance in the therapeutics of these cases. Since their presence is so constant and their correction so easy, it would seem only reasonable that any eye strain be first eliminated among the first therapeutic measures adopted. The results of such treatment will not leave the physician long in doubt of its utility.

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A CASE EXHIBITING BILATERAL PALSY OF THE SUPERIOR RECTUS MUSCLE, THE IRIS AND CILIARY MUSCLE WITH LOSS OF POWER CONVERGENCE.*—Illustrated.

By Frank H. Edsall, M. D.,

OPHTHALMOLOGIST TO ST. FRANCIS HOSPITAL, PITTSBURG,

—AND—

Theodore Diller, M. D.,

PHYSICIAN TO THE NEUROLOGICAL DEPARTMENT OF THE PITTSBURG FREE DISPENSARY.

H. T., 52 years of age, blacksmith; denies syphilis. He was in robust health, and working regularly at the time he met the accident about to be described, and to which he attributes all the symptoms from which he now suffers.

Four years ago he fell into a pit eight feet deep, sustaining a fracture of a rib and a number of bruises. He was not rendered unconscious by the fall, but states that he was very much "shaken up" by it, and was in a dazed condition for some time afterwards. The next day after the accident he made an effort to work, but found he was too stiff and sore to do so, and gave up the attempt. He states that he has from that day to this suffered from the symptoms from which he now complains, except that the pain from the broken rib and bruises soon disappeared.

Present Condition.—Short, stout, thick-set man. Walks with feet wide apart, taking short steps, carrying head thrown well

*Read before the Pittsburg Academy of Medicine, October, 1895.

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back. The sclera are seen between the upper lids and superior margins of the cornea. His speech is slow, measured, sometimes halting. (This symptom, too, appeared since the accident.) He complains of pains in the occipital region, and along the entire spine. Muscular strength and power of endurance are greatly diminished. His finger movements are clumsy, so that he finds it very difficult to button or unbutton his coat. The knee jerks are normal. No disorder of sensation. There are several points along the spine pressure over which causes much pain.

Examination of the eyes of patient gave the following results: Vision in right eye 20/xxx. In the left eye the vision was reduced to mere light perception. There is complete paralysis of the superior recti muscles of both eyes, although the pupil of the left eye is not quite so much displaced downward from the horizontal plane as is that of the right eye. The internal recti muscles show, also, a partial palsy, the oblique muscles, seemingly, doing most of the work in converging. The oblique muscles and the external recti muscles do not give evidence of being in any way affected. There is a marked staphyloma of the sclera in the superior nasal quadrant of left eye, arising, apparently, from compression due to irregular muscular action upon the globe. The irides show very little response to stimuli of any kind, the pupils being very decidedly contracted and showing little tendency to relax except under a mydriatic.

The fundus of right eye exhibits no marked abnormality. There is a myopia of about 1.00 D., accompanied by a myopic crescent, of moderate size, at temporal margin of disc; and the disc is, also, slightly paler than normal at the temporal border. In the left eye the disc is very oval in form, greenish in color, indistinct in outline, with some of the vessels entirely atrophied and the caliber of the remaining ones very much diminished.

There is also a staphyloma of considerable size at the temporal side of disc.

The most interesting feature of the case is the unusual character of the muscular palsies, the only feasible explanation of which is that given elsewhere in this paper, and which gives rise to some interesting speculations in regard to the location of and connection between certain centers connected with the functions of the eye.

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The case is one of unusual interest to both the neurologist and ophthalmologist. The general smptoms presented are those so commonly seen after accidents where the victim has received a general "shaking up," and which have been called "railroad spine," "traumatic neurosis," "traumatic neurasthenia," etc.

From the facts that the eye palsy is bilateral, and affects only certain muscles supplied by the third nerve, it must be concluded that the cause of the palsy is not in the third nerves themselves, but in their neuclei; or else, possibly, as suggested by Gowers,[1] in a higher center. This being admitted, the ocular symptoms offer the strongest sort of evidence in favor of the genuineness of the symptoms which go to make up his traumatic neurosis. Moreover, assuming (what must be the case) that the nuclear disease is more than *functional*—that definite morbid changes have taken place—would it be too much to assume that the manifestations going to make up the symptom—complex, traumatic neurosis, were also dependent upon organic changes in nerve centers?

But it is not our purpose at this time to follow out this interesting train of inquiry, as one of us expects, elsewhere, to dwell upon this phase of the case at some length. It should, however, be added that the case has never been in litigation, nor are such steps contemplated. Now as to the eye symptoms which more immediately concern us in this paper.

The patient's statement that the eye symptoms, which are now present, arose the day after the accident, and have continued without change up to the present time, must be taken with some caution; yet it must be admitted that some ocular trouble (palsy) dates back to this day after the accident. The symptoms may have been, at times, more pronounced than they are now; but it is quite probable, from the patient's statement, that he carried his head back from the beginning of his trouble; that palsy of the superior recti muscles did begin, as he states, the day after the accident.

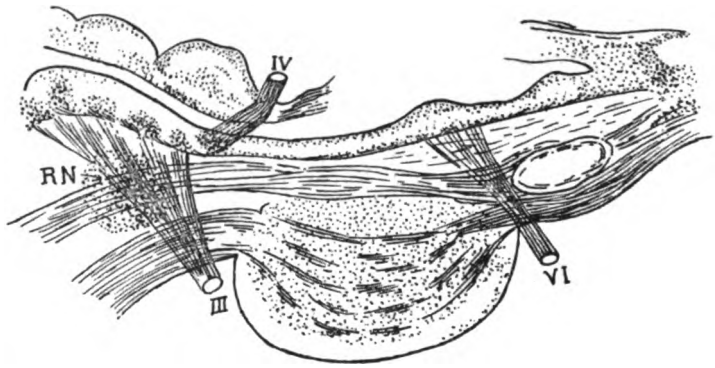
[1] Diseases of the Nervous System. Vol. 2, p. 185.

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What change occurred in the nucleus which caused these ocular symptoms? One naturally answers, vascular damage or inflammation. Gowers[2] makes three classes of nuclear palsies according to the probable nature of the morbid process.

1. *Chronic*, due usually to degenerative processes.
2. *Acute*, suggestive of inflammation, (the polio-encephalitis of Wernicke), coming on in a few days or weeks.
3. *Sudden*, occurring within a few minutes, or at most an hour or two, always indicating a vascular lesion.

Gowers lays stress on the distinction between *acute* and *sudden*. Further, he states that "The vascular lesion



Sagittal section through the cerebral axis, to show the nuclei of the ocular nerves in the floor of the aqueduct of Sylvius and the fourth ventricle, and the course of the nerves to their exit, the various groups of cells from which the third nerve may be seen. R. N. red nucleus of the tegmentum; L., lemniscus (sensory tract); CC, motor tract in the crus cerebri seen to traverse the pons and enter the anterior pyramid of the medulla. (Starr.)

which causes sudden palsy, the onset of which is survived, is usually obstruction of the arterial branches which the basilar gives to this part. The obstruction is usually bilateral. Hence small foci of softening are often found in each third nerve nucleus." This explanation perhaps fits our case better than the inflammatory theory, because of the suddenness of the palsy. Besides the symptoms are best explained on the supposition of a bilateral lesion.

[2] Op. cit. p. 197.

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The exact position of the lesions is a matter of interest. The nucleus of the third nerve, as seen in the accompanying diagram, is really a series of nuclei occupying a considerable area in the floor of the aqueduct of Silvius, (10 *mm.* in length according to de Schweinitz,)[3] situated just below and in front of the anterior corpora quadrigemina and extending downwards and backwards, almost to the much smaller nucleus of the fourth nerve. The arrangement of the nuclei according to Hansen and Voelckers,[4] as modified by Kahler and Pick[5], is as follows[6]:

"The most anterior portion of the nuclei is related to accommodation, the next to the reflex action of the iris, while the remainder of the nucleus, comprising its chief part, subserves the external muscles in the following order, from before backwards: Internal rectus, superior rectus, levator palbebra superioris, inferior rectus, inferior oblique. But the contiguity is lateral as well as anteroposterior, and the disposition is thus complex." The annexed scheme is the modification suggested by Kahler and Pick.

Mid-line.

Ciliary muscle.

Sphincter iridis.

Levator palp.

Rect. Int. Rect. Sup.

Rect. Infer. Oblique. Inf.

(Obliq. Sup., 4th n.)

Upon this scheme, our case cannot be satisfactorily explained. Conjugate palsy of the upward movement of the

[3] Nervous Diseases by American authors, (Dercum) p. 773.
[4] *Arch. f. Ophthal.*, Bd. XXIV, 1878 p. 1.
[5] *Prag. Zeitsch. f. Heilk.*, 1881, p. 301.
[6] Gower's op. cit.

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eyes, in association with paralysis of the levators, has been observed a number of times, and is due, according to Kahler and Pick, to lesions in the posterior part of the third nerve nuclei. In a case reported by Gowers[7] in which (like our case) the much rarer palsy of the upward movement alone, without involvement of the levators, existed, "A very small tumor was found in the middle line behind the posterior quadrigeminal bodies, damaging slightly these, the velum and the adjacent part of the inferior vermiform process of the cerebellum." This leads Gowers to state that a lesion in the gray matter of the corpora quadrigemina may produce a palsy of the upward conjugate movement of the eyes. But in our case there is palsy of the ciliary muscle, and of the iris; and the anterior portion of the third nerve nucleus presides over these muscles. Moreover, although each internal rectus muscle is active in lateral conjugate movements, the power of convergence is lost. There can be no doubt that there is a separate center for convergence. The power of accommodation, too, is lost; and it is reasonable to assume, as does de Schweinitz, that these two nuclei, normally associated and usually affected together, are situated in close proximity. If this be so, and the main features of the scheme of Pick and Kahler be accepted, then the center of convergence must be situated in the anterior part of the third nerve nucleus. But as the superior recti are paralyzed in our patient, and not the levators, it is reasonable to suppose that the center for the superior rectus is anterior to that of the levator. Because these movements, localized in the anterior portion of the third nerve nucleus, are affected along with, and only with, the superior rectus palsy, we do not believe that the lesion is, as suggested by Gowers, in the corpora quadrigemina, but in the anterior portion of the third nerve nucleus.

To better explain, then, the penomena exhibited in our case, we would suggest the following modification of the scheme of Kahler and Pick.

[7] Op. cit. pp. 185-6.

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Mid-line.

Ciliary muscle.

Center for convergence.

Sphincter iridis

Rect. Sup.

Lev. palp. Rect. int.

Rect. Infer. Obliq. Inf.

(Obliq. Sup. 4th n.)

The evidence offered by our case permits us to suggest the arrangement in the anterior portion of the nucleus as far back as the center for the superior rectus muscle. It gives no hint as to the exact arrangement of the nuclei behind it.

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A NEW METHOD OF TREATING PTERYGIUM.*

By Anton Coe, M. D.,
of Washington, D. C.

I offer no apology in calling the attention of the members of this society to a new method of treating pterygium, especially, first, since the patient can be treated while sitting erect in a chair; second, since there is no interruption to his business or the free use of his eye, and third, because all signs of the growth soon vanishes to return no more. Having disliked all prescribed methods for treating this disease, I have often thought that there must be a better and simpler way, and after a careful reading of the literature upon this subject, I am satisfied that the whole trouble lies alone in the apex and that the vascular supply is not a part of the disease, but only an effect, as it but answers the call of the apex for blood, and thus reasoned, that if the apex could be destroyed the vascular supply would cease, from disuse. The correctness of my reasoning will be seen by the following cases:

Case I. Mr. E. H., white, 64 years of age, came to my office with a *pterygium crassum* on temporal side of left eye, and a *pterygium tenue* on temporal side of right eye. They had been treated for some time by the usual methods with no good effect. Operation was advised, but as he was a very busy man he could not spare the time. I told him I could operate in a way that would not interfere with his occupation and so proceeded. The eye being placed under the influence of a 2 per cent. solution of cocain, applied to the apex only, I heated to redness a platinum probe and

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applied it to the lower half of apex, leaving the upper and deeper portions for the third and fifth days. On seeing the eye again on the third day I was surprised and delighted to find that the vessels feeding the lower portion first cauterized were disappearing, and they so progressed until six days after, when there was scarcely a trace of the former trouble.

Case II. Mr. B. A., white, 42 years of age, appeared with *pterygium tenue* on the right eye, nasal side. Said "he only wanted me to make his eye more presentable, as he was going in a few days to attend the Masonic Conclave at Boston and would return for operation when he got back." I said I could operate at once and he could go with a better eye, and if he needed any further treatment he could call upon his return. As he did not return to my office and five months had elapsed, I called on him to see the result of the operation, and was again surprised as in case No. 1, to see no trace of the *pterygium* and he said "it cleared up at once," and thus the reason for his not calling on his return. As I had not touched the vessels in either case, but simply removed the cause by cauterizing the apex, does it not clearly show that the disease lay wholly in the apex, and that we are guilty of an error of judgment when we remove the vascular supply as a part of the disease?

The probe used in these cases is not unlike the one devised by Gruening, except that it is longer. I have bent the blade, near its point, to an angle of 45°, so as to cauterize the apex only. The same instrument is used for cauterizing ulcers of the cornea. I believe we have in this operation an ideal one, and trust that it may yield the same good results in your hands that it has in mine.

1110 F street, N. W., Washington, D. C.

*Read before the Ophthalmological and Otological Society of the City of Washington.

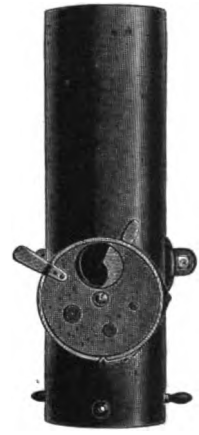
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AN ADJUSTABLE LAMP OR LIGHT-SCREEN, ESPECIALLY ADAPTED TO THE SHADOW TEST.*—Illustrated.

By Mason W. Zimmerman, M. D.,
of Philadelphia.

TO obtain the best results in examination of the eye by artificial light, it is essential that the size and shape of the light-source shall be easily adjustable and general illumination of the room reduced to the minimum. This is peculiarly true of the modern and more exact methods





of applying the shadow-test, in which accuracy depends very largely upon reduction in the area of both light and mirror surface.

The illustrations show a device which has in my hands,

*Shown at the meeting of the ophthalmological section of the Philadelphia College of Physicians, February 18, 1896.

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after very careful experiment, seemed to meet all the indications outlined above. The apparatus is made entirely of blackened brass, and accurately adapted to the standard Argand gas-burner. The "Welsbach" burner, now being extensively used, requires slight changes in the manner of supporting the chimney.

The main vertical barrel of the screen completely covers the glass chimney, and is furnished on the inside with springs which clasp the latter gently, hold it in position, and prevent unpleasant noise when it is moved. The lateral openings are arranged to present opposite the point of greatest illuminating power under the conditions which exist during the day. In all large cities at least, the gas pressure is lower in the evening, and the point of election in the flame appreciably nearer its base.

On one side, four circular openings, respectively, 5, 7½, 10 and 25 *millimeters* in diameter, have been arranged in a revolving disc which is accurately halted at the desired point by a spring clip. These fulfill all possible requirements of skiascopy, while the largest is quite sufficient for most ophthalmoscopic work. Behind this disc is an independent shutter (shown partly closed in the cut), by means of which the light can be entirely cut off.

Directly opposite the above openings is one which exposes practically the entire flame, while its projecting border prevents needless radiation of light. Two shutters are hinged to fit over this opening, one being a blank to prevent the escape of light when using the opposite side, while the other is fenestrated and backed by a sheet of thin porcelain glass. The latter plan secures a clear white illuminated image corresponding to the opening in the metal, and one which, owing to the absence of marked diffusion at its margin, forms a most satisfactory object for distant muscle testing. For this purpose I have adopted the simple Greek cross as suggested by Dr. Ziegler,[1] but smaller, and find it satisfactory. The diameter of the arms is 10 *millimeters*

[1] See paper on "Greek Cross Test Object," read at meeting of the Pan American Medical Congress, Washington, 1893.

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and the total diameter of the cross 50 *millimeters*. The form of this opening can, of course, readily be changed to suit the user.

Heating of the metal can in a measure be prevented by lining the body of the shield with dark Asbestos felt, or its unpleasant effects modified by using the same material as a jacket. I have not, however, found this necessary, as the insertion of three small non-conducting handles at equal distances apart and near the base, make rotation very easy, and other changes can be made without serious discomfort.

1633 Chestnut street.

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A CASE OF PIGMENTATION OF THE CORNEA.

By Casey A. Wood, M. D.,
of Chicago.

THIS peculiar and rather rare condition is well illustrated by the following case:

Mr. D., 56 years of age, came to me November 29th, 1895, and from him I obtained this history: He has always been near-sighted, and at school his eyes were weak and he was unable to study with any satisfaction. Has always had more or less vertigo and frontal headache but until recently never noticed any redness of the eyes or morning adherence of the lids. Two months ago he began to have supra-orbital pain on the left side extending to the top of his head. This hemicrania was very severe and for seven weeks it continued, with some remissions, until about a week ago, since when it has been continuous. For most of this time he was not able to sleep and then only when under the influence of narcotics. He never had any pain in the right eye or right side of the head.

After the second attack of pain he noticed that his eye was quite red and that the vision was not as good after the pain had somewhat subsided. It was much diminished after the last attack, just before I saw him.

S. t. Pr. Vision of the left eye = finger counting at 4 feet; right, $\frac{15}{200}$; with his reading glasses he reads Jaeger 4, but cannot distinguish even the coarsest print with the left eye. The local signs and symptoms, as regards the left eye are these: T+2, shallow anterior chamber, motionless and semi-dilated pupil, several small posterior synechiæ; hazy, infiltrated cornea and doubtful cloudiness of the lens. The cloudy cornea, upon an examination with a strong Zeiss lens, focal illumination, win-

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dow reflex and the employment of fluorescin and pyoktanin solutions, was found to consist, first, of a diffuse interstitial infiltration about the center of the cornea, and of a punctate keratitis, with the dots arranged in the usual pyramidal fashion. The base, 6 or 7 *mm.* broad, is intersected by fine vessels, and the apex, where the spots are few and scattered, reaches almost to the middle of the pupil. No vessel advances into the cornea more than 2 *mm.* from the limbus, and some of them appear to end in the dots, forming a picture like that of nerve filaments and the tactile corpuscles. Both the ciliary and the scleral vessels are much engorged. The eye-ball is tender. The condition of the fundus cannot be made out.

With the exception of a marked refractive error the right eye appeared normal. I at once applied a 1 per cent mixture of eserin to the left eye and gave a ½ per cent solution with cocain for use at home until he could decide about the operation which I suggested. On December 2nd I performed a peripheral iridectomy upwards. Bleeding occurred from the iridic vessels and the anterior chamber filled with blood. Two days subsequently the tension was considerably less (the wound having not yet closed), the pain had gone and the patient was able to sleep without taking analgesics. The signs and symptoms of glaucoma now steadily disappeared, the a. c. soon cleared up, until on the 14th of January, V. L. $= \frac{15}{200}$, and I was able to determine the refraction of both eyes as follows: $110° + 3. + 6 = \frac{20}{70}$ $180° + 3. + 6. = \frac{20}{20}$ With +2 added patient reads J. 1, R. and J. 6, L. and the cornea is less hazy. The eye is very quiet and the man is able to do some work. The F. of V. for white, left, is, however, greatly reduced, and comprises an area bounded by the 20th parallel. There is an opacity in the upper fourth of the crystalline which looks as if, in tearing away the iris from the lens, the anterior capsule had been injured. The ophthalmoscope, although the media are still hazy, shows a marked excavation of the disk.

February 3, 1896. The left lens is now quite opaque, but the eye is absolutely quiet; T + ? or Tn; there has been no trouble with the eye since last report. There is a rent in the capsule, corresponding in position with the cut edge of the iris, the edges of which are everted and faintly pigmented.

January 21, 1896. In the cornea, a little to nasal side of pupillary center is a large isolated 1 *mm.* broad, rounded mass

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of pigment, and towards the outer edge of the pupil a smaller one, also discrete. At the edge of the pupil, when at its average size, are minute scattered deposits, some of them arranged in chains but most of them irregularly dotting the cornea. Then, directly downward, is a perfectly clear band of corneal tissue about 2 *mm.* wide, entirely free of pigment. As we proceed still farther downwards from the pupil towards the limbus the fine dots once more show themselves until just before the sclero-corneal junction is reached the peculiar picture is presented of what seems to be round corneal dots undergoing a process of pigmen-

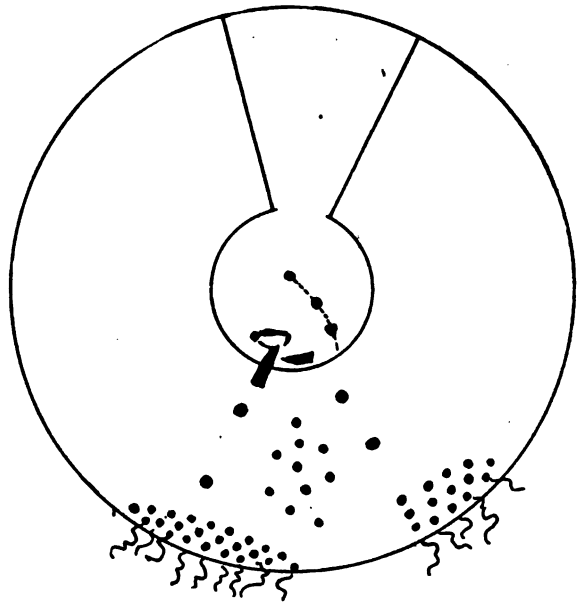


FIG. I.

tation. We then reach an area of hazy cornea, 6 *mm.* long by 3 wide, bounded below the sclera. This contains a large number of capillaries, plainly seen to be extensions from the anterior scleral vessels, running past or into a regular row of medium-sized dots, about 30 in number, that are placed almost equidistant from the limbus cornea and from one another. Some of these, especially at the center, are jet black, some grayish, and some are whitish—in all stages of pigmentation.

March 6, 1896. A portion of the diffuse interpunctate haziness, just referred to has disappeared, so that entirely trans-

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parent cornea is seen, in which the black dots, chains and irregular figures are planted.

The best description and discussion of pigmentation of the cornea known to me will be found in an article by Weeks in the first number of the New York Eye and Ear Infirmary Reports. He there reports the case of a patient, 32 years of age, who gave the following history: "About twenty years ago the point of a needle entered the cornea of the right eye and injured the lens and possibly the iris. Considerable inflammatory reaction followed; subsequently two operations were resorted to which the patient thought were for the removal of remnants of lens substance. But little vision remained in the eye, and this gradually disappeared. The eye remained quiet until about two weeks before the patient presented himself, when it became red and very painful, the pain extending to the corresponding side of the head. This had continued with slight remissions until the present time."

There was a uniform zone of clear cornea 1 *mm.* wide running entirely around the limbus. Inside of this the cornea is opaque, the opacity being of a rusty brown or tan color, so that Weeks was unable to say whether he was dealing with a sclerosed, amber-tinted lens, dislocated into the anterior chamber, or a pigmented cornea. After an attempt to relieve the symptoms by iridectomy, enucleation was performed and the eye hardened in Müller's fluid. The a. c. was found to be filled with an altered blood clot. The following is the report of the subsequent examination:

"On opening the eye the anterior chamber is found to be occupied by what appears to be a blood clot. The iris occupies its normal place except at one point where it is bulged forward by the pressure of a mass of lens substance from behind. The capsule of the lens is partly collapsed and retains fragments of lens substance. Posterior to the capsule of the lens is a cyclitic membrane to which the anterior portion of the detached retina is firmly adherent. From this membrane the retina extends backward in the form of a narrow cylinder to the optic nerve.

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The choroid remains attached to the sclerotic. The space between the choroid and the detached retina is filled with a flocculent grayish exudation. The optic nerve is normal in size.

"*Microscopical Examination.*—The chief interest centers in the cornea, which is of normal thickness. The opacity mentioned above was thought to be due to a deposition of blood pigment on the posterior surface of the cornea; however, such was not the case. The epithelial layer shows some granules at its base, the pigmented fluid having apparently passed through the canals for the passage of nerve fibers. Bowman's membrane is normal. The substantia propria throughout the portion corresponding to the opacity is the site of the deposition of numerous pigment granules, evidently composed of the hematin of the blood. These granules are found to be most abundant in the lymph spaces between the lamellæ, but are also present between the connective-tissue bundles and individual fibers. In shape the granules are irregularly cuboidal, having a diameter of 1.5 *mm.* Distributed throughout the substantia propria, they are largest and most numerous just beneath Bowman's membrane. Descemet's membrane presents the usual hyaline appearance; the endothelium is not disturbed. The corneal zone, that appears to be clear, microscopically, is free from pigment, except in a few lymph channels extending from Fontana's spaces. These are crowded with the pigment granules and appear to be the paths through which the pigment, in a liquid form, has traveled from the sinus of the anterior chamber into the substantia propria of the cornea. The line of demarcation between clear and pigmented corneal tissue is very sharply cut. When looked at with a Hartnack $\frac{1}{4}$ objective, one-half of the field will be occupied with a clear cornea, the other half being pigmented. The fibers of the cornea do not appear to be degenerated. The newly formed connective tissue elements which fill the wound made at the time of the operation are pigmented.

"Sclerotic normal and free from pigment. The anterior chamber is filled with an inflammatory membrane composed of connective tissue and blood vessels, free blood corpuscles, and masses of pigment—granules. In the iris angle and in Fontana's spaces the masses of pigment are very plentiful."

The writer believes that the pigment entered the corneal substance in the form of soluble hemoglobin and was then transformed into a salt not soluble in the corneal lymph.

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Treacher Collins reports a very similar case, in which, also, the appearances were exactly those of a dislocated lens. The patient had received a blow in the eye four months before this observer saw her. Vision was nil and T + 1. A microscopical examination showed the presence of pigmentary granules between the corneal fibrillæ and, as in Weeks' case, these were not confined to the spaces of Fontana.

The writer also reports, in the same paper, the case of a patient, 40 years of age, who, four years previously, had received a blow on the head followed by defective vision. Four months before seeing her she had had double iritis. There was a corneal ulcer and a dark clot in the anterior chamber of the right eye. The right cornea showed a rusty brown patch at its center, changing to deep red at the periphery. A hazy, colorless corneal zone extended about the sclero-corneal junction. In this case tension was normal and there was no blood clot in the anterior chamber.

Vossius reports two cases, an abstract of which I quote from Weeks:

"*Case I.* Female, 5 years of age. Three months previously patient received an injury to the left eye which soon produced complete blindness. When seen the cornea presented a central opaque disc of a smoky, brownish-red color, with a narrow, clear zone at the periphery. Very slight trace of previous injury. At the end of three weeks the central patch became more sharply defined and took on a greenish hue, resembling a lens dislocated into the anterior chamber. The tension was plus throughout, V. = 0. Pain constant. After enucleation the eye was hardened and examined. The narrow zone at the periphery was not of normal transparency, but was traversed by brownish lines near Descemet's membrane. Blood coagulum in the anterior chamber. Lens in position. The substantia propria of the cornea in the pigmented area was filled with small granules which were of a pale yellow color, reflected the light strongly, and stained readily with eosin. The granules filled the lymph spaces and were also found within the lamellæ. Some of the large lymph spaces and lacunæ near Descemet's membrane at the

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periphery were filled with the granules. Sections treated with a solution of ammonium sulphate gave a greenish color, indicating the presence of iron.

"*Case II.* Male, 13 years of age. Was wounded in the eye with a fork in December, 1886. November 22, 1887, the right eye has been painful and inflamed during the summer. *St. Pr.* Some peri-corneal infection. Cornea transparent only in a narrow peripheral zone. Central circular patch, dusky reddish-brown. Tn; V. = 0. Small scar, size of a pin's head, near the sclero-corneal junction. Enucleation performed November 23, 1887. Deposits in the pigmented portion resembling those described above were found. *Small blood vessels filled with blood corpuscles were found passing from the limbus into the parenchyma of the cornea.* The granules occurred in the lymph canals and between the fibrillæ. They were also found at the base of the epithelium of the surface of the cornea, having apparently followed the canals for the passage of nerve filaments. Sections placed in a concentrated solution of cyanid of potash took on a dark color, indicating the presence of iron."

Vossius considers the granules found in the lymph spaces and between the fibrillæ to be masses of hemosiderin, following the authority of Neumann. He also believes that they are the result of bleeding into the *substantia propria*, but both Weeks and Collins deny this.

Caspar also has an article upon the subject.

Although corneal pigmentation is an exceedingly rare process there seems no reason why it should not occur. Although the cornea has no blood vessels, and although in all the cases of pigmentation so far recorded (excepting the case of Vossius) vascular new growths in the parenchyma were not found, we must remember that such a state of affairs has taken place elsewhere, as in the pigmentation of non-vascular osseous tissue. We also know that migratory white corpuscles may act as carriers of hematin many millimeters from the vessel which normally held them. Moreover, especially when intraocular tension is marked and an acute inflammatory process is going on, the diapedesis of red corpuscles into and about the corneal lymph channels is probably easy, both from a blood collection in

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the anterior chamber and from the external vascular loops at the limbus corneæ.

So far as my own case is concerned it would appear as if we have mainly to deal with a pigmentation of the dotted deposits on the membrane of Descemet commonly seen in the so-called serous iritis.

Finally, we notice in the majority of the cases recorded: 1. that they were mostly examples of some form of glaucoma, with increased and persistent intra-ocular tension; 2. there was bleeding into the anterior chamber; 3. there was brownish, smoky or other discoloration of the central area of the cornea, and 4. pigmentation was found at the limbus corneæ and in other parts of the anterior segment of the eyeball.

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DIRECT MASSAGE AS AN AID IN THE TREATMENT OF CERTAIN HYPERPLASIÆ OF THE ANTERIOR OCULAR SEGMENT.—Illustrated.

By H. McI. Morton, M. S., M. D.,
OF MINNEAPOLIS, MINN.

OPHTHALMOLOGIST TO THE ST. BARNABAS HOSPITAL, MINNEAPOLIS.

IN a "note upon the value of direct massage of the cornea as an agent in the treatment of corneal opacities," read before the State Medical Society of Minnesota in June, 1894, and subsequently appearing in the Philadelphia *Medical News*, I gave the result of my experience in the treating of corneal opacities by direct massage with a spoon devised by myself for this purpose, and spoke incidentally of the possibility of its value in the treatment of certain other neoplasms. In this paper I said:



"The large number of remedies that have been proposed to clear the cornea of scars or superficial infiltrations, are but discouraging proof that we have not as yet any one method of treatment that is eminently satisfactory. It may be observed, from their widely different local action, that the pathology of these formations has not been carefully kept in view by the advocates of many of these proposed remedies.

"There is no great number of consecutive cases, in which vision is impaired by an opacity, that will yield to the same treatment so far as a drug is concerned. The different conditions present demand different means of therapeusis; in the one case a slightly irritating remedy, in the other a decided irritant.

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It is not that I would advocate any new drug, but a method that facilitates the action of medicines in many cases, and even more, will, in itself, I believe, do much towards the diffusion, or entire dispersion, of the obstruction to vision. The cure of peripheral opacities is usually demanded for cosmetic reasons alone, but in the case of a scar in the pupillary area, it becomes more than a mere disfigurement, as it may greatly interfere with vision.

"After any corneal ulceration a certain amount of the cellular infiltration present clears up, and in cases in which there has been little more than a loss of epithelium, an almost imperceptible scar remains. This is particularly true in the case of children. In such cases very little of the true corneal tissue has been involved, the epithelium suffering most. There is a class of cases, however, in which the ulceration has left a more or less decided loss of the cornea, which is partially or completely filled up with cicatricial tissue. In many cases treatment gives but unsatisfactory results. In a few of such patients, I have, by a process of massage which I shall describe, been enabled to aid materially in rendering the cicatrix less dense. Of this I am sure, and the diminished density will of course result in much less diffusion of light and in an improvement of vision that has been noticeable in some of the cases."

In the two years which have elapsed since the reading of this paper, making three and a half years in which I have tried the method, I have felt a gradualllly increasing confidence in its utility, not alone in the treatment of corneal opacities, but as well, as an adjuvant in the treatment of certain obstinate scleral and corneo-scleral affections. It has been of noticeable value in hastening the resorption of episcleral nodules, and in that intractable disease sclero-keratitis (migratory scleritis, sclerosing keratitis). This latter affection, fortunately rare, is unfortunately obstinate in yielding to the usual therapeutic methods. I have come in contact with only three cases of true sclero-keratitis in the past two years, for one must not confound the affection with a typical case of interstitial keratitis. Direct corneal and circum-corneal massage in these cases, with cocain ointment (gr. V to ʒi) was attended with much improvement. There was noticeable resorption of the corneal infiltration and reduction in the scleral engorgement; brought about, I believe, by the stimulation of the lymphatic channels, and the improved

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tonicity of the vascular apparatus, of the entire anterior ocular segment, as well as by the very thorough method of directly applying the medicament. As I have said in my first paper, we cannot hope to entirely clear up a dense cicatricial mass as the result of a deep ulceration of the corneal stroma, but we may look for improvement in opacities in general in two ways: First, we know that surrounding this dense central mass there is, very often, an area of less dense opacity, due to cellular infiltration, and imperfectly organized corneal tissue. I have noticed that this infiltrated area has cleared up in a large number of cases, and vision has much improved. In the second place ulcers, which have attacked the epithelial, or superficial corneal layers only, leave opacities which are much benefited or are entirely dispersed by massage. I shall quote my article of two years ago, to illustrate my method of applying direct massage to the eye, as I have since seen no necessity for any modification:

"The cornea is rendered insensitive by a 10 per cent solution of cocain, which at the same time, by its action upon the corneal epithelium, facilitates the entrance of the drug used. The head of the patient resting upon the knee of the surgeon, the eyelids are separated with the thumb and forefinger of the left hand, and the massage spoon is held in the right. The cornea is gently rubbed, alternately in a circular and radiating manner, from one to three minutes, and this is repeated as often as is indicated in the individual case. It is to be remembered that the uvea, or region just external to the corneal limbus, nourishes the cornea, the lens and the vitreous, and is the great lymph producer for the eye, particularly the anterior segment. For this reason I desire to lay stress upon the fact that these movements should not be confined to the area immediately adjacent to the opacity, but should be applied not only all over the cornea, but also to the ciliary zone upon the sclera. After the massage has been practiced, I knead the globe with the thumbs of my two hands, carefully but thoroughly. By following out this, the lymph-channels are thoroughly opened, and the activity of the lymph-currents increased. This in itself is not only a means of dissipating the opacity, but allows the medicament used an excellent chance for action. In corneal massage through the lids, as advocated by various authors, it is impossible to obtain the effect in a satisfactory manner, and for two

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principal reasons: In the first place, the manner of applying massage through the lids to the cornea, or any portion of the anterior ocular segment is, if I may use the expression, a "blind" one. It is impossible for the operator to tell at just what point he is applying the massage. Again, the method is indirect and cannot be as efficacious as when the massage-spoon is employed."

This instrument I devised about three and a half years ago, and I have used it continuously in suitable cases ever since. It is so arranged that the cornea is thrown into very small furrows, and it will be noticed that any ointment used is held nicely between the forks and can thus be worked into the cornea during the massage.

The figure illustrates the construction of the instrument, which is very simple indeed, being a flat spoon, or more properly spatula, 6 *mm.* wide by 8 *mm.* long, traversed by three grooves, thus making four branches, which are perfectly rounded in order to prevent injury to the cornea. It will be seen that the cornea is thrown into several furrows, which, as the massage-spoon is moved over the surface, include the cornea and circum-corneal zone. This is unattended with any injury and with very little or no discomfort to the patient. In some cases it is unnecessary to use cocaine, so tolerant does the eye become.

I trust I shall not be misunderstood as advocafing a "cure all" method of treatment, or one to be applied indiscriminately to all cases. In the class of cases mentioned, it has aided me materially, and three and a half years' experience with the method convinces me that it is not only rational, but worthy of recommendation for trial by the profession. So far as I am aware, the method is my own. I am informed that Prof. Fuchs of Vienna has an apparatus connected with a battery, with which he taps the opacity, but this, in principal and application, is very different from the plan here spoken of. It is a rational plan, which will, I think, appeal to the observer at once. That it is of assistance in the treatment of an obstinate class of cases, I am satisfied.

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EXPERIMENTS WITH THE ROENTGEN RAYS ON THE EYE.

By Dr. F. C. Harnisch.

LATE FIRST ASSISTANT TO THE ROYAL EYE INFIRMARY, LEIPZIG—OPHTHALMIC SURGEON TO THE ALEXIAN BROTHERS AND ST. ELIZABETH HOSPITALS, CHICAGO.

As soon as the importance of the Roentgen rays for surgical diagnosis became known, the thought naturally presented itself whether the method might not possibly be of service in detecting foreign bodies or certain conditions in the eye ball.

The preliminary experiments, which will be detailed, were made with pigs', calves' and lambs' eyes. Then a case of a foreign body in an eye, with vision already destroyed, opportunely came under my care and was used for experimentation.

With great difficulty I succeeded in obtaining the various instruments necessary for the work, after which the apparatus gave results as perfect as any that have been published. As the method employed is certainly known to my readers, I will not give a detailed account of it, but merely state a few facts that will be of interest to those working in the same direction. The source of the electricity is a 6-cell storage battery, of 170 ampere-hours each, from which during the operation of the interruption a current of 4 to $4^1/_2$ amperes is indicated by the Edison am-meter, having an average of twelve volts. The Ruhmkorff coil is a 20-inch one and easily gives a 12-inch spark with the necessary electric force. For working purposes I have found that the above mentioned current gives a spark of $5^1/_2$ inches. The interruptor is the original Foucault mercury interruptor, giving at an average of 400 interruptions a minute, the steadiest light in the Crookes tube. The form of the Crookes tube, which I found most serviceable, after numerous compari-

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sons with other forms, is about 6 to 7 inches long, about 1 1/2 to 1 3/4 inches wide at the base of bombardment and tapers off slightly towards the cathode. It is of the same general proportions as the tube recommended by Edison, with the exception that the electrodes are differently placed in the latter tube. I think that in my tube the rays are emitted from the convex extremity in a smaller area so that a lead screen is not required to avoid the penumbra, and that the tube itself is easier of application to many parts of the body. The time of exposure in my experiments was usually forty-five to fifty minutes.

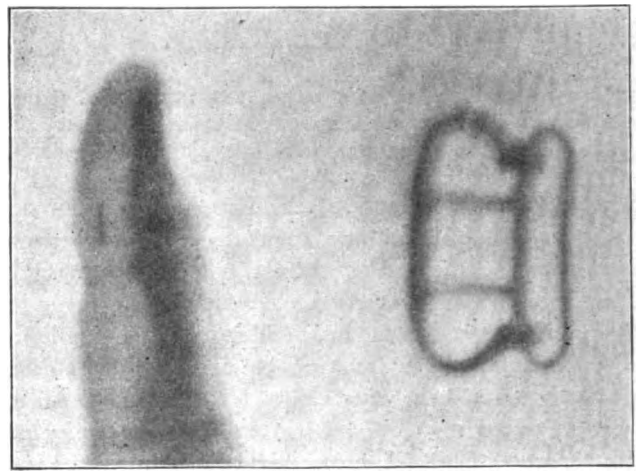


PLATE 1.

To show the distinctness of my skiagraphs, in comparison with those that are shown in other journals, plate 1 is first introduced, although it is not a subject of our direct consideration. It represents the last two phalanges of the left index finger with a small foreign body visible opposite the last joint. This is a piece of graphite from the sharp end of a lead pencil and is approximately one-quarter of an inch in length.

Plate 2 shows the *comparative resistance* to the rays of various bodies. Uppermost is the shadow of a pair of glasses; this shows very distinctly the opacity of the glass and the still greater opacity of metal. To the left of the glasses is a broad vertical object which has four shadings, the lightest, that is to say the lowest, shows one thickness of sheet aluminum, No. 26. Above there is a second, then a third, and uppermost a fourth thickness.

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Directly underneath the pair of glasses are seen three pigs' eyes. In the first one the optic nerve is shown by the dark spot in the upper right quadrant; in the upper left quadrant there is a pin; in the left lower quadrant is a faint but distinct indication of the lens. The picture in the middle shows an eye taken directly from in front; the pin was inserted in the vitreous body; nothing is seen of the lens. The right picture beauti-

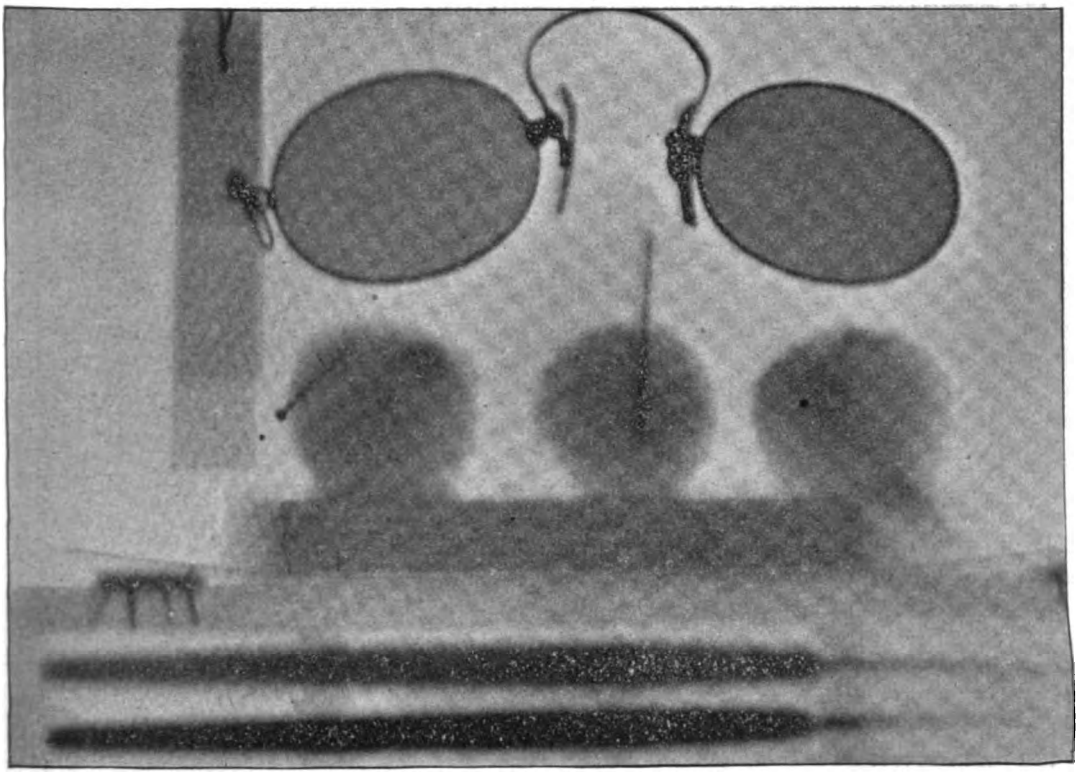


PLATE 2.

fully shows the entrance of the optic nerve in the right lower segment and is also remarkable for a black mark passing upward and to the left from the optic nerve to the lens, clearly indicated by a darker round shadow. Directly in the uppermost segment of the sclera is a small piece of a pin. The dark line in the center, I venture to say, represents the *canalis hialoideus*, because it is directed in the course of this canal, and the eye

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on being opened showed no abnormality. This line was not obtained in any of my skiagraphs of other eyes. The eyes rest on a piece of oak $^{3}/_{8}$ of an inch high, 3 inches long and $1\,^{1}/_{2}$ inches deep. The grain of the wood is well shown. Underneath are the faint outlines of an ordinary small dissecting case containing two instruments, the upper one with an ivory handle, the lower one with a steel handle. The box was closed; in the

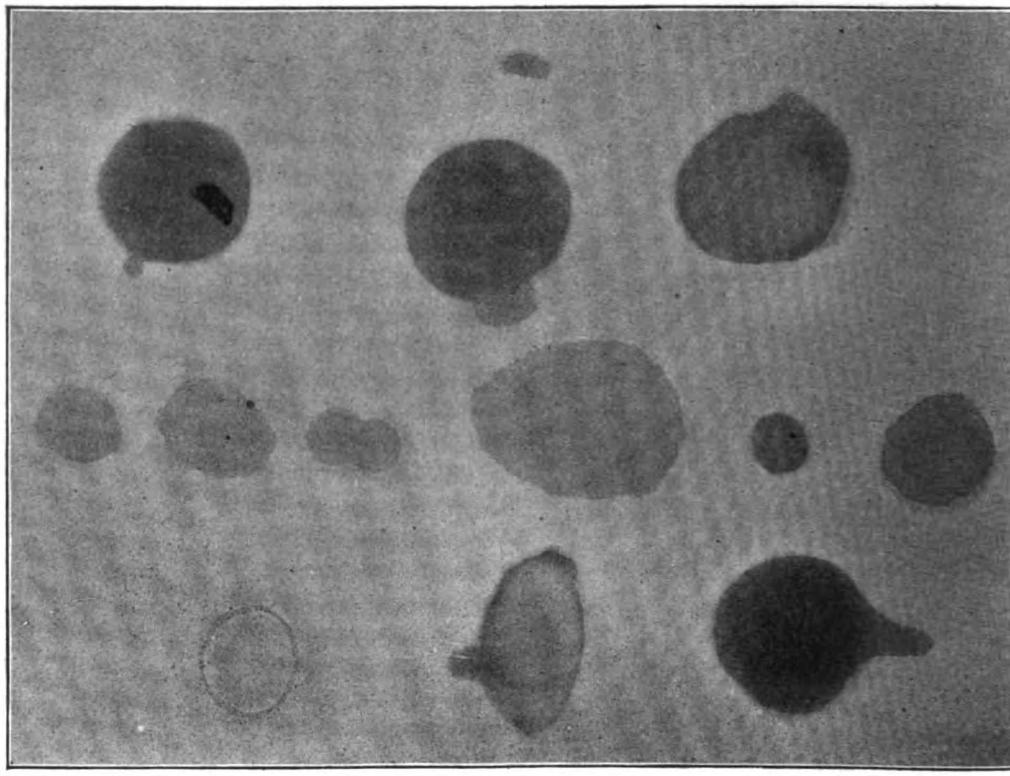


PLATE 8.

frame of the box are seen the hinges. This picture shows that the resistance of the eyeball, as a whole, is about equal to the resistance of a piece of oak $1\,^{1}/_{2}$ inches thick and of four thicknesses of aluminum, size No. 26.

Plate 3. This shows different parts of pigs' eyes. Uppermost is a small segment of optic nerve. Beneath this are three round objects; the left one shows an eye containing a piece of

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metal; the central one is an eye with an artificial prolapse of the vitreous body on the lower surface, exactly the size of the lens. The entire central part of the picture, which corresponds to the vitreous and lens, is distinctly darker than the periphery representing the surrounding membranes. The right picture shows the sclera, chlorioidea, and retina opened up, with the the vitreous and lens removed.

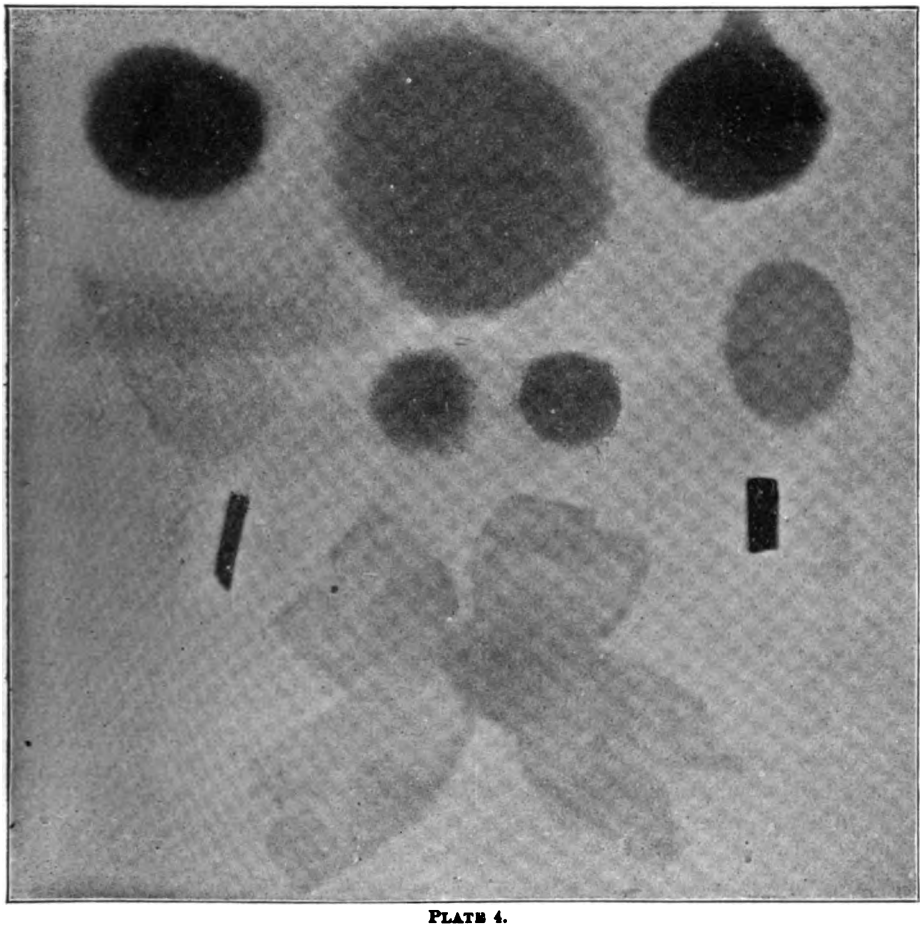


PLATE 4.

In the third row are six shadows. At the extreme left, there is a cornea; the second and fourth shadows represent each a vitreous body spread on the object holder. For some unaccountable reason, these are much darker in the plate than in the negative, while the third figure ought to be heavier than it is

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represented. This is a small double circle and shows a lens which was accidentally turned over when the time of exposure was half over. The fifth shadow is also a lens. The right hand shadow is a cornea with the iris. On the lowest line are three objects; the left one is scarcely visible. This is the choroid and retina. The central figure is one-half of the sclerotic coat with the optic nerve. The picture on the right is a whole eye.

In the upper left and right corners are pigs' eyes, the one on the left containing a piece of glass; the one on the right incloses a piece of metal. The other pictures represent parts of the eyes of a calf. Between the pigs' eyes is a large globular body, the vitreous. In the second row of pictures, on the left directly underneath the pig's eye containing the piece of glass, is a large light picture, the choroid and retina, in a single layer. Then come two round bodies, of which the left one showing a cataractous lens which one of the calves' eyes luckily contained, while the right one is a normal calf's lens. In the negative, it is plainly seen that the cataract shows less resistance to the rays than the normal lens. On the right is a round figure showing the cornea. Below there is an irregular outline, somewhat resembling a butterfly. This was obtained by cutting open a calf's eye, removing the vitreous, lens, iris and cornea, and then spreading it out flat. The center represents the entrance of the optic nerve, to the left of which is the sclerotic alone and to the right the sclerotic with the choroid and retina, the darker edges showing the ciliary body. To the left of this picture is a piece of glass 1 $^1/_2$ *mm.* thick and on the right a piece of brass 1 *mm.* thick.

It is also necessary to mention that pictures were taken of the lenticular capsule showing that this part of the eye offers hardly any resistance to the Roentgen rays.

From the above plates, and numerous others which could not be represented in this article, I have made the following table, which shows the degree of resistance of the various parts of the eye to the X rays, the most translucent tissue being at the head of the list, the others following in order:

1. Capsule of the lens.
2. Choroid and retina.
3. Sclerotic.
4. Cornea.
5. Vitreous body.
6. Lens.

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On account of the invisibility of the Roentgen rays to our visual perception, it is important to ascertain whether the retina itself is excited by them—even if they reached it—or whether the rays are entirely intercepted by the lens and vitreous body. We observed from plate 2 that the degree of transparency of the eyeball is approximately equal to that of the piece of oak wood and the four layers of aluminum. We have also seen from the table that the transparency of the membranes is relatively great in comparison with that of the vitreous and lens. If we could exclude a part of that resistance, we would expose the retina more directly to the influence of the rays. This may be done by turning the eye ball extremely upwards or downwards and directing the rays through the exposed sclera. In this way the retina is reached directly, without the interference of the lens and greater body of the vitreous. At no time could any difference of retinal perception of the rays be experienced. Furthermore, there is also a corroborative proof of this in eyes affected with cataract.

In plate 4, the left lens is slightly more transparent than the normal. I have exposed patients with cataract, as well as others in whom the cataract has been removed, to the Roentgen rays and the result was also negative. We can therefore conclude that the retina is practically insensitive to these rays.

As the eyeball is almost entirely surrounded by bone, which is practically impenetrable to the Roentgen rays, we could hope, at most, to demonstrate a foreign body only in the anterior exposed part of the bulbus. This may be possible to a greater or less extent according to the amount of projection of the eyeball and the configuration of the osseous orbital arch and the nose. In especially prominent eyes, we may hope to obtain a skiagraph as far back as the ciliary body and even farther. Different expedients, such as producing an artificial exophthalmos by injections in Tenon's capsule, as suggested by Dr. Van-Duyse in his article "Les Rayons Roentgen en Chirurgie Oculaire" might be of service in rare instances, but usually are not necessary as the following case demonstrates:

F. P., 23 years of age, laborer, was injured in the right eye by a piece of steel eight weeks before he came under my care. There was a well-marked iridocyclitis with a moderate ciliary injection of the vessels 6 *mm.* above the uppermost point of the cornea, a *staphyloma ciliare*, 2 *mm.* in diameter, was visible.

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No foreign body could be detected in this by palpation with a probe, although a slightly increased resistance was noticeable, nor did the ophthalmoscope reveal any trace of it. The whole vitreous was cloudy and the fundus could not be seen.

Field of vision showed no defect; tension was T. — 1; vision = fingers at three inches. The left eye was already effected by sympathetic inflammation of the most violent type. Vision = fingers at ten inches.

I determined to obtain a skiagraph of the injured eye with the hope of finding the position of the foreign body. I was, of course, especially anxious to know if it were in the staphyloma, because, as above mentioned, the probe in being pushed from above downward met some resistance. I first placed the Crookes tube on the outer side of the eye with the sensitive film in the inner angle in such a way as to get the greatest possible exposure of the anterior part of the eyeball. For a steady retension of the film, some pressure against the eyeball was unavoidable and produced frequent motions of the eye and lids so that the negative was unsatisfactory. Then I placed the photographic plate over the right temple and the Crookes tube to the left and in front of the left eye so that the rays passed over the root of the nose through the anterior part of the eyeball onto the plate. An assistant raised and held the upper eyelid while the patient was directed to look down. This position was excellently maintained by the patient for forty-five minutes. Still it was occasionally necessary to lower the lid for a few seconds. Referring to the figures in the adjoining plate 5 and diagram at *a* is visible a darker shadow convex to the right; to the right of this and below (*b*) is a fainter shadow. This fainter shadow I take to be the shadow of the occasionally lowered lid. The darker shadow represents the eyeball, in which a dark streak is noticeable. As this corresponded with the location of the staphyloma, I took it to be the foreign body. These configurations are most visible in the negative, less in the photograph, and least of all in the accompanying plate.

For obvious reasons it was desirable to remove the foreign body. At the beginning of the operation a moderately broad Graefe knife was entered, with its edge forward and downward, 1 *cm.* outward from the external limbus of the cornea and pushed inward and downward into the eyeball, so that its tip was well behind the supposed foreign body; then by carefully

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depressing the handle the blade was brought forward until I could distinctly feel increased resistance, as if the flat side of the blade was pressing against a resisting body, which I hoped was the particle I was searching for. The knife was held fixed in this position and I then introduced a small knife above the scar, until, with the aid of scissors, I reached the hard substance, which was comparatively superficial. I seized this with forceps, and tried to remove it by dissecting it out. The greater part of the dense tissue came away, but to my great disappointment failed to show any foreign body. I had merely removed cicatricial tissue. With the first knife I could still feel resistance and, to ascertain whether the foreign body was contained in this, I pushed the tip of the knife several times into the hard mass, which seemed very tough, so much so that I feared to break the knife. Still neither in this way nor by the use of an electro magnet could I find any metal.



PLATE 5.

I am convinced that the dense tissue was cicatricial tissue and that the small streak on the skiagraph was produced by it. Indeed, if the streak had been due to metal, it ought to have been more differentiated from the surrounding tissue. I have photographed other parts of the body (hands, etc.) with scars, but could never detect any trace of them in the skiagraph. This is not surprising, as our knowledge of the transparency of soft tissues to the Roentgen rays is very imperfect. I believe as soon as we know more of the power of the rays, the time necessary for exposure, etc., we will be able to skiagraph the soft tissues and some abnormalities, just as we now frequently differentiate the skin from the underlying fat and muscles. I am making experiments to this end and shall submit the results, whatever they may be, to the readers of the ANNALS at some future time.

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Although this case was not as conclusive as I had hoped, it shows conclusively that the Roentgen method may be of great value in occasional cases. No one would think of using this cumbersome method where the foreign body could be otherwise detected.

Some of the points above referred to are not as well demonstrated by the plates as by the negatives. I consequently extend an invitation to any of my confrères interested in this work to call at the laboratory (managed by Dr. O. L. Schmidt and myself) for a demonstration of the apparatus and for a view of the negatives referred to.

103 East Adams St., Chicago.

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A FEW CASES FROM MY RECORDS.—Illustrated.

By H. McI. Morton, M. S., M. D.

OPHTHALMOLOGIST TO THE ST. BARNABAS HOSPITAL, MINNEAPOLIS, MINNESOTA.

Pseudo-Erysipelas, After the Instillation of 1-120 gr. of Atropin.

Mrs. K., 36 years of age, consulted me June 12, 1895. She had old corneal opacities and vascular keratitis in both eyes. T= normal. I prescribed atropin (gr. iv to f ℥i) and a boracic lotion, and directed her to use hot fomentations. Her husband called upon me on the morning following, in anything but a cheerful frame of mind, and informed me that after the use of *one drop* of the solution of atropin in each eye, the lids began to get red and swollen, and that now the eyes were completely closed, although they had not repeated the dose. He had been afraid to bring her to my office. I thought this an exaggeration on his part, and at last prevailed upon him to go home and bring her. To my astonishment, when she arrived, I found the symptoms much worse than he had described. The infiltration of both upper and lower lids was so great that the oculo-orbital and oculo-malar sulci were completely obliterated, and the cheeks were intensely swollen to the angles of the mouth. There was much pain of a severe, burning character. The great amount of infiltration and the redness looked not unlike Rhus poisoning. She has not been out of the house, however, and the relation of cause and effect was too marked to permit of any doubt as to the cause of the trouble. The trouble disappeared in a few days, under cold compresses, and a solution of lead, water and laudanum.

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Syphilitic Ulcer of the Conjunctiva.

Mrs. K., 46 years of age. Saw the patient April 10, 1893. Had "sore eyes" twenty years ago. They soon recovered, however, and she had had no trouble since until last December. About December 22, 1891, her eyes became inflamed and have continued to get worse. She has specific sores upon lips, hard palate, throat and vagina; cervical glands much enlarged. Gives a clear syphilitic history. The right eye has a light "brick dust" red injection, and on outer corneal limbus, and mostly below the horizontal meridian of cornea, is an ulcer about 4 *mm.* in vertical diameter by 3 *mm.* in horizontal. The edges of the ulcer are firm and the base covered by a thin film. The case rapidly improved under the iodides and mercury and the ulcer of conjuctiva healed rapidly. I saw this case some three months ago, and she was doing nicely, the eye looking clear.

A Severe Case of Blepharospasm, Improved by Stretching the Orbicularis.

Mrs. F. G., 53 years of age. Saw the patient for the first time July 8, 1893. There were violent attacks of clonic spasm of the orbicularis, and of some of the facial muscles. These attacks had lately been separated by very short intervals and would awaken the patient from a sound sleep. The mere excitement of conversing induced an attack which was both ludicrous and pitiful to behold. There were no tender pressure points. Knowing the intractability of such cases to treatment, I was at a loss what to do for a time, but finally advised stretching of the orbicularis under ether narcosis. This was done and followed by relief. The spasms, although not entirely stopped, were much reduced, both in severity and in frequency, for a period of over one year, after which I lost track of the case. My friend, Dr. Rhindlaub, of Fargo, tells me he had the most beneficial effect from the administration of the fluid extract of conium in a case similar to this. It is probable that the irritation was peripheral in this case, for it is the only way I am able to account for the relief.

Since many of these cases have a reflex causation the position of the point of irritation will make each case a law unto itself, and should determine the treatment in each instance.

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A Case Illustrating the Fact that Atropin Will Occasionally Disclose Latent Trouble in the Refraction of the Eye, that an Homatropin Solution Has Failed to Reveal.

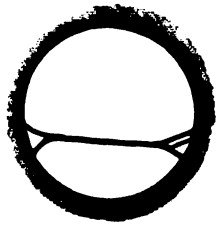
Miss J. P., 15 years of age. Consulted me for a long standing headache and severe asthenopia. Has been fitted to glasses and wearing O. D. —1.00 sph. and O. S. —1.50 sph. I induced paralysis of accommodation by repeated instillations of Homatropin, extending over two days, and the tests showed —.75 cyl axis 180 in each eye. These lenses were prescbribed and without benefit. After a few weeks of trial, in which there was no improvement, I placed her under atropin (gr. viii to f ℥i), instilled three times daily. After one month of this I tested her and found

O. D. + 1.50 ⊂ + .75x90.
O. S. + 1.50 ⊂ + .75x90.

I prescribed the full astigmatic correction, with one-third spherical correction, and this was attended by relief. I believe that homatropin will, in nearly all cases, be quite as satisfactory as atropin for purposes of refraction; but this illustrates a class of cases in which we have a young, irritable and spasmodic ciliary muscle that will not yield to the weaker agent. In cases of myopic astigmatism, or simple myopia (by homatropin) in a young person, with a history of severe asthenopia, I think it advisable to use atropin for *some weeks* before deciding that one's refracting of the case is correct.

Peculiar Attachments of a Shred of Persistent Pupillary Membrane.

Mrs. C. A. P., 40 years of age. While making an ophthalmoscopic examination I noted this peculiarly attached shred of persistent pupillary membrane.



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A NEW EYE MODEL FOR USE IN OPHTHALMOSCOPY AND SKIASCOPY.—Illustrated.

By Clarence A. Veasey, M. D.,

ADJUNCT PROFESSOR OF DISEASES OF THE EYE IN THE PHILADELPHIA POLYCLINIC; CHIEF CLINICAL ASSISTANT TO THE OPHTHALMOLOGICAL DEPARTMENT OF THE JEFFERSON MEDICAL COLLEGE HOSPITAL; CONSULTING OPHTHALMOLOGIST TO THE PHILADELPHIA LYING-IN CHARITY HOSPITAL, ETC.

THOSE who have had the opportunity to give instruction to students beginning the use of the ophthalmoscope, using an eye model for the purpose, must have observed the great dissimilarity between the conditions attendant upon the employment of the media and fundus of the human eye and that of an eye model. In the former we have the nose, cheek and the border of the orbital cavity which interpose new conditions that were not found in examing the interior of the eye model, so that no matter how adept the student has become in the use of the ophthalmoscope with the model eye, the new conditions he encounters in his first attempts to examine the interior of the human eye make him, to say the least, rather awkward and the manipulation much more difficult than the one he has been taught, so that he is obliged, to a considerable extent, to begin to study the use of the ophthalmoscope anew.

Many ophthalmic surgeons are well acquainted with the Vienese hard rubber mask that is used to hold the animal's eyes while the different operations that are performed upon the human eye are being practiced so that no detailed description is here necessary. Suffice is it to say that it is a most excellent reproduction of a human face made from hard rubber, the orbital cavities being filled with a clipping arrangement that holds the animal's eye firmly in position for operation, and making the conditions resemble those of the human face and eyes as nearly as possible.

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The writer has had constructed for himself an eye model that can be placed in one of the orbital cavities of this mask projecting as far forward as the human eye usually does, which when in position gives the nearest approach to the conditions attending the manipulations of the ophthalmoscope in examining the human eye that has yet been attained.

As seen in Fig. 1 the eye model is in position and the nose and orbital border present practically the same conditions that are found in the human head, so that the manipulations of the ophthalmoscope are the same in each. The head may be lowered to a horizontal position or at any angle between the vertical

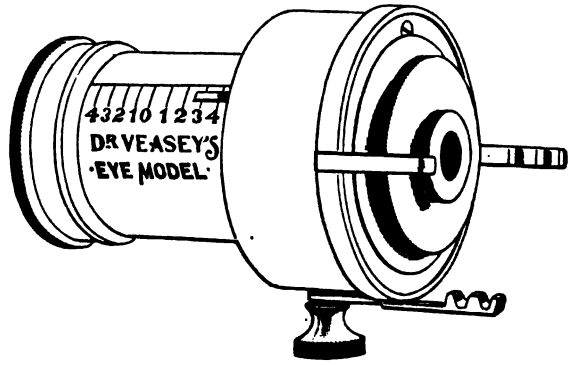


and horizontal, simulating a patient in bed, and the manipulations of the ophthalmoscope and the light studied under these conditions. For the practice of skiascopy a trial frame from the test case is placed on the nose of the mask precisely as it would be placed on the nose of the human patient.

Fig. 2 presents an exterior view of the eye model, which consists of a tube with an inner and outer wall between which moves another tube. Each tube is about $3\frac{1}{2}$ *cm.* long and the inner tube about 2 *cm.* in diameter, the outer one of course being a little wider. The anterior tube moves between the two walls of the posterior tube by means of a screw and thread movement,

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thus giving the least friction possible and preventing the two tubes from sliding apart. In the extreme anterior portion of the front tube there is placed a carefully ground and centered 20 diopter convex lens so that that there is no reflection on it from portions lying in front, as is the case when a lens is deeply situated, to annoy the observer. Around the front tube is placed a collar by means of which the model is adjusted in the Vienese mask or on a stand. Passing backward from beneath the collar is a small indicator which shows upon the scale engraved upon the posterior tube the amount of ametropia. On this scale the myopia is indicated by red figures and the hypermetropia by white figures as is the case with the ophthalmoscope. The posterior end of the tube is closed by a cap that screws on in which is placed a lithographic reproduction of the human retina.



Another cap containing a ground glass disk for use in demonstrating the manner of the formation of images upon the retina accompanies the instrument.

For the purpose of making the examination more difficult and consequently the operator more experienced, there are three small disks with central openings that can be placed in the pupillary opening, thus reducing the size of the pupil from 10 *mm.* to 8, 6 or 3 *mm.*, and with these the reflex is avoided that is common to some means of reducing the size of the pupil.

For those who do not possess the Vienese mask and who do not care to purchase one, the eye model can be placed on a stand as in Fig. 3, when the clip for holding the lenses, both for correcting the ametropia by means of skiascopy, and when it is desired to make a given amount of astigmatism for ophthalmoscopic examination, or for correction, is placed on the model

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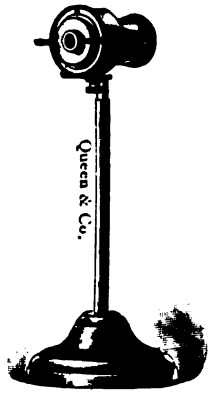
as shown in both Figs. 2 and 3. The model is thus mounted on a tube that slides inside of another tube, thus enabling the student to raise or lower the eye at pleasure.

The model is made of brass, highly polished and lacquered, and the interior of the tubes are blackened.

The different conditions found in the human eye ground may be painted on small disks, placed in the cap at the end of the tube and studied. A lithographic reproduction of the normal human retina accompanies each instrument.

The advantages claimed for the above model are as follows:

1. When used in the mask as primarily intended the conditions for studying the manipulations of the ophthalmoscope more nearly resemble those attending the use of the latter instrument in making examinations of the human eye than have been presented by any eye model heretofore.



2. When a certain amount of ametropia is desired to be studied and the tube is revolved until the indicator points to that amount the latter undergoes no change by a slipping of the tubes during examination.

3. One tube never falls out of the other during examination.

4. The lens is so placed that there are no annoying reflexes from portions of the instrument in front of it.

5. The interchangeable pupils may be employed without any reflexes.

Messrs. Queen & Co., of this city, have very skillfully made the model for me, from whom it may be obtained, and have furnished the above cuts.

47 North Seventeenth Street.

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ABSTRACTS FROM RECENT GERMAN OPHTHALMIC LITERATURE.

Quarter ending April 1, 1896.

By H. V. Würdemann, M. D.,
OF MILWAUKEE, WIS.

Episcleritis Periodica Fugax—Suppurative Keratitis-Keratomycosis—Tuberculosis of Eye—Subjective Visual Perceptions—Subconjunctival Sublimat Injections—Treatment of Lachrymal Disease—Strumous Ophthalmia and Pediculosis—Post-Diphtheritic Paralysis of the Accommodation—Albuminuric Retinitis—Hyaline Bodies in the Optic Nerve—Amblyopia During Lactation—Sphincterotomia Pupillaris—Sphincterolysis Anterior—Apotomia Iridis—Resection of Trigeminus for Blepharospasm—Dacryocystitis—Etiology of Pterigium—Operation-Indication for Enucleation—Erythropsia—New Cataract Operation—Instruments—Corneal Incisions-Extraction with Concave Incision—Hemianopsia—Melano-Sarcoma of Orbit—Sympathetic Ophthalmia—Acromegaly—Nuclear Ophthalmoplegia—Lachrymal Stricture—Ciliary Ganglion—Beginning of Sight—Exophthalmic Goiter and Thyroid Extract—Cyclops—Pathognomonic Symptoms of Congenital Syphilis—Geographical Origin of Trachoma—Tenonitis—Reflex Ear Disease—Basedow's Disease—Experimental Parenchymatous Keratitis—Blepharochalasis—Hydrophthalmos.

Episcleritis Periodica Fugax.

Fuchs, Ernst. (*Archiv. f. Ophth.*, Heft IV., 1895.) The author cites twenty-two cases of a transitory and periodical form of episcleritis which shows itself as a deep injection of violet color in the episcleral and scleral tissues. There is often swelling of the inflamed area, somewhat different from that of catarrhal inflammation in that it is a hard infiltration. The disease behaves more like an inflammatory edema than inflammation with exudation. It is usually limited to some quadrant of the eye changing in course of a day or two to another spot or

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appearing in the other eye. In only the severest cases does it surround the cornea. In fourteen of his cases he had seen characteristic episcleral nodes with swelling which rapidly disappeared and had only an external likeness to ordinary episcleritic nodes. The disease may appear in both eyes or it may alternate from one to the other. In several instances only one eye became inflamed. The disease is attended by pain, lachrymation and photophobia. The eye is tender when pressed through the lids; in one case intense headache existed. Pain generally begins with the onset of inflammation; as the redness diminishes it as a rule disappears. There is swelling of the eyelids in most cases. In two instances there were noticed fine gray points or infiltrations on the edge of the corneal limbus. The iris is sometimes hyperemic. Deep ciliary injection with painful accommodation occurred in eight cases, pain and difficulty of convergence in three cases; odema of Tenon's capsule and exophthalmus in one case. The course of the disease varies from one or two days to eight days. It exists in the majority for about a year, having relapses with intervals of some days or months. In some cases there were two or three attacks in the year and others there were intervals of two or three weeks between the attacks. In one case there was a free interval of a year. The disease was not often observed, although he had seen fifteen men and seventeen women, the oldest 51 and the youngest 21 years of age; the average 35 years of age. Most of these patients were well nourished. Uric acid diathesis existed in a few cases. This may be a factor and accordingly he has limited their diet to more of a vegetable nature and has given Vichy mineral water. Four of these cases had previous attacks of acute rheumatism. The episcleritis was not intermittent in any of the patients, although in three cases there was found enlargement of the spleen. Many of these cases have migraine and neuralgia of the fifth nerve. He has noted two other relapsing and periodic eye diseases that could be confused with episcleritis fugax. The one is a relapsing form of edema of the lids which is paler than the surrounding skin, disappearing as a rule in a few days and lasting in some cases only one or two days. Relapsing erosions of the cornea and little infiltrations at the corneal limbus are sometimes seen in persons of middle life, occurring in one or both eyes two or three times a year. Neither form is described in text books.

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Contributions to the Pathological Anatomy and Bacteriology of Suppurative Keratitis in Human Beings.

UHTHOFF AND AXENFELD. (*Archiv. f. Ophth.* Abth. I, 1896.) This is an article of 130 pages going extensively into the pathology and describing twenty-four cases. These include superficial and perforating ulcers, hypopyon keratitis, keratomolacia, panophthalmitis, etc., of local origin or appearing in the course of general diseases from different forms of infection. There were thirty-five cases of typical ulcus corneæ serpens, ten cases of hypopyon keratitis, two cases of keratomalacia, one case of keratomycosis aspergillina, two cases of beginning panophthalmitis with corneal abscess. In these there were found the Frankel-Weichselbaum diplococcus (pneumococcus) in twenty-six cases of which four cases were typical ulcus corneæ serpens and two cases beginning panophthalmitis; pneumococci at the same time with other micro-organisms in seven cases; five of these were typical ulcus serpens; no pneumococci but other micro-organisms in thirteen cases, four cases were typical ulcus serpens; negative bacteriological findings in four cases, two of these ulcus serpens. There was one case of keratomycosis aspergillina arising from dirt being thrown in the eye, causing a typical hypopyon keratitis. The eye was not enucleated although bacteriologic examination of the pus was made. Experimental inoculation of animal corneæ was done in all cases and results noted. The literature is extensively quoted.

Keratomycosis.

SCHIRMER, (*Archiv. f. Ophth.* Abth. I, 1896,) reports a case of keratitis from aspergillus which he had seen in the clinic, and which came to enucleation. Microscopic sections were made which showed the inflammatory process to have been caused by the mycelium and similar in form to other kinds of suppurative keratitis. This is the first case in which microscopic examination of the eyeball has been made although there have been a number of cases described from clinical view.

The Relation of Tuberculosis of the Eye to Tubercular Disease of Other Organs, With Remarks Upon Diagnosis and Prognosis.

DENIG, RUDOLF. (*Archiv. f. Augenheilk.*, Bd. XXXI, Heft IV, 1895.) For the reason that the assumption of local tuberculosis of the eye has not yet met with general acceptance

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amongst ophthalmologists, the author searched the literature for cases of tubercular eye disease in order to find out in what proportion of cases of eye tuberculosis proofs of general tuberculosis had been shown. He examined the literature, finding reports of 200 patients who were supposed to have tubercular lesions of the eyes, to find out if there were proofs of diseased lungs, bones or glands. The result was as follows: In reports of seventy-two cases of conjunctival tuberculosis there were fourteen who were suspected to be otherwise tubercular subjects; in only seven were there proofs of the existence of tuberculosis in other organs; in three there were evidences of healed lesions. In eighty-six cases of tuberculosis in the iris and ciliary body sixty-seven had no symptoms in other parts of the body. There were forty absolutely healthy, twenty-seven suspected and four had evidence of pre-existing tubercular disease. Of thirty-six cases of tubercular disease of the choroid in sixteen there were no other evidences. In the examination of 200 patients who had tubercular disease of other organs in only five did he find changes in the fundus which could be ascribed to a tubercular cause. He concludes that we must accept the possibility of ocular tuberculosis as freely as local lung or joint tuberculosis in the sense of a primary infection. This form of local tuberculosis must be differentiated from the metastatic form. The latter seldom occurs. The prognosis depends upon the form of the disease; as regards life is favorable if not a granulation growth, as this tends to metastasis and sooner or later threatens life. Metastatic ocular tuberculosis has an unfavorable prognosis.

Subjective Visual Perceptions.

ZEHENDER. (*Klin. Monatsbl. f. Augenheilk.*, November 1895.) In a series of articles maintains the following: (1) The cirulation of the blood in one's own eye can be easily seen without the aid of any apparatus by even pressure of the finger on the ball of the eye. (2) That the visibly circulating blood is not in the capillaries of the retina but in the choroid. (3) The blood current is not regular, sometimes is accelerated, slowed or at standstill or even flows backwards. This irregularity seems to be influenced by steady fixation of the eyes. (4) That the movement is not synchronous with the action of

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the heart or respiration. (5) The vessel walls are not seen, the blood apparently flowing in channels of its own choosing. (6) Bright points called by Pflueger "cell explosions" are to be seen. (7) Zehender agrees with others that objective light first produces chemical decomposition of the retinal pigment and secondarily involves the rods and cones; that similar pigment-decomposition may be produced through the blood. (8) The pigment grains and their movements are under favorable conditions visible in one's own eye. (9) By the movements and changes of the pigment grains there arise at times strikingly regular polygonal figures, similar to those described by other authors. (10) These figures and pictures of retro-retinal structures behave in many respects like magic lantern pictures, perhaps comparable to what creatures with facetted eyes may see. Zehender has not remarked that the images alter their relative positions with ocular or head movements.

Subconjunctival Sublimat Injections.

SEGGEL. (*Klin. Monatsbl. f. Augenheilk.* November 1895). Reports four cases in which he tried injections of bichlorid of mercury subconjunctivally. One was a case of perforating injury of the ciliary region seen within twenty-four hours with extrusion of vitreous, prolapse of iris and purulent infiltration of cornea, anterior chamber filled with bloody exudate. Bead of vitreous and iris cut off and injection of sublimat solution made under conjunctiva; great pain, necessitating hypodermatic of morphia, followed. Chemosis and odema of lids ensued and increased, and the eyeball became tender despite two more injections, local applications of cocain and atropin. On a fourth injection the exudate in pupil became smaller, chemosis, odema and tenderness disappeared. After fifth injection the corneal infiltration began to clear and patient was later discharged cured. In another case the patient had orbital cellulitis developing from infection from periostitis of one of metatarsal bones of the foot, characterized by sudden exophthalmos with chemosis, swelling of lids and fever. One-twelfth of a syringeful of 1:1000 sublimat solution was subconjunctivally injected. The next day fever had gone and within five days the exothalmos and swelling had completely subsided. He notes that the pain resulting from an injection may require

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iced compresses to relieve it. It is important to make the injection as far as possible from the limbus and to use no fixation forceps. Seggel says that adhesions seldom occur between conjunctiva and sclera and are but temporary. Daily injections are only required, if at all, when suppuration is threatening.

Treatment of Lachrymal Disease.

FROELICH, RICHARD. (*Klin. Monatsbl., f. Augenheilk.*, January 9, 1896.) The author employs rather radical treatment in dacryocystitis, using chlorid of zinc injections, with after-probing, in much stronger proportions than have hitherto been advised. He first drops cocain in the conjunctival sac, washes out with 1:5000 sublimat, injects a little 5 per cent cocain solution in the tear duct and sac and then fills the entire eye with vaselin over the cornea to shield it. The patient carries his head well back and the cavity of the orbit is filled with a 4 per cent solution of sodium chlorid, and then a caustic solution of chlorid of zinc (10 per cent) is injected into the sac and allowed to remain in three minutes or more, when it is washed out by a 4 per cent solution of sodium chlorid. If any of the caustic escapes it is at once neutralized by the salt solution and the cornea is likewise protected with the vaselin. If well cocainized, no pain and but little reaction occurs, one to two hours afterwards. There is sometimes a little odema of the lids. This may be repeated on a second or third day. Twenty-four hours after using the caustic the canal is to be washed out by sublimat solution, and generally in favorable cases no pus is to be seen after the first injection. Eighteen cases were treated in this manner, of which ten were rapidly cured. Four months was the longest time of any case under treatment, the latter where the disease had existed ten years. In the eight cases not cured by one injection three were relieved by a second injection. In the worst case there were four injections made, the last one after three months. There were five that were not fully relieved.

In addition to the caustic method where stenosis exists, Fick and Froehlich use Ottowa's method of lachrymal massage, putting in a small sound, massaging the canal up and down, gradually increasing the size of the sound, as it is found that it comes out easily. Froehlich claims that rapid dilatation of stricture is obtained by this method.

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Strumous Ophthalmia and Pediculosis.

NORRIE, (*Centralbl., f. Praktische Augenheilk.*, October, 1895,) reiterates the statement previously made in a Danish publication that so-called scrofulous ophthalmia, be it blepharitis, phlyctenular conjunctivitis or keratitis, is often caused by pediculi capitas. He has continued his observations and believes that the pedicula lead to ulceration of the scalp from scratching, and these ulcers become infected by streptococci. The fingers become covered by bacteria, which are rubbed into the edges of the eyelids and conjunctival cul-de-sac and inoculated into the cornea.

Such a cause is not common in America, even in our tenement house districts.—ED.

Post-Diphtheritic Paralysis of the Accommodation.

MOLL, ALFRED, (*Centralbl., f. Praktische Augenheilk.*, January, 1896,) comments upon 150 cases of post-diphtheritic paralysis of the accommodation. In 145 cases it was possible to fix the beginning of the paralysis, which varied from two to eight weeks after the diphtheria, although in one case it came on immediately. Paralysis existed on an average of four weeks and passed away in all cases. The amount of accommodative paralysis varied from 1.5 to 6 diopters, which was estimated by the strength of lens necessary to read small print at 24 *cm.*, after correction of the refractive error. In hyperopic cases there was relaxation of the latent error. In one case where myopia existed in one eye and hyperopia in the other the patient could still see to read, but proper correction proved that the amount of paralysis was the same in both eyes. In only four cases was this combined with sphincter paralysis. In sixteen (over 10 per cent) there was paralysis of externi with double images. In three there was paralysis of the abducens. There was one case of monocular ptosis where the other museles were not affected. One instance of insufficiency of the interni with crossed double images at least eight months after the diphtheria. In most of these cases there was paralysis of the soft palate and pharangeal muscles, light ataxic symptoms and loss of the knee reflex. Ophthalmoscopic examination was negative except in one case where coloboma of the optic nerve was found.

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Prognostic Value of Albuminuric Retinitis.

POSSAUER (*Beitr. z. Augenheilk.*, Heft, XV, 1895), after studying the records of 67,000 patients seen in Haab's clinic in Zurich, finds that albuminuric retinitis was observed in only 131 cases (1.9 per cent) Authors vary greatly as regards frequency of retinitis in kidney disease: 6.7 per cent. (Schweigger) to 33 per cent (Galezowski.) Most writers agree that as a rule death occurs within two years at least after appearance of the retinitis. Possauer has seen seventy-two cases, thirty-nine in private and thirty-three in hospital practice; of the latter there were fourteen men, all of whom died within two years; of the nineteen women thirteen died within two years, two after longer time and four were still alive. The longest period of life observed was six years. Of the thirty-nine private patients (twenty-six men and thirteen women) sixteen men and seven women died within two years. In those still living the retinitis is dated from a minimum of two and a quarter to a maximum of eleven years. The better surroundings of private patients give them advantages, but even here the mortality is 53 per cent in the first two years.

Hyaline Bodies in the Optic Nerve.

SACHSALBER (*Beitr. z. Augenheilk.*, Heft, XXI, 1895,) had the opportunity of an extended clinical observation, with post mortem examination, of a case. In a woman with good vision there were found upon ophthalmoscopic examination hyaline bodies in the optic nerve extending into the vitreous 3 to 5 D, V and F nearly normal. Nerve symptoms developed and patient died of carcinoma, but the post mortem showed no pathological changes except in the brain. Examination of the eyeballs after preparation and microscopic section showed that the hyaline bodies were mostly in the region of the lamina cribrosa or in neighborhood of the choroidal foramen. They exist in several layers of the retina, mostly in the outer granular, the granules of which are pushed out of place. The nerve layer is intact; some of the hyaline bodies are behind the lamina in the nerve proper. They are of different shapes and sizes, are homogeneous and drop like highly reflecting bodies, staining well to eosin. A small number have nuclei. The smaller ones deflect the course of the nerve fibers, but the larger bodies seem to produce

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a breaking of their continuity. The nerve substance seems to have more than the usual number of cells and nuclei, except in some places near the bodies where the structure seems homogeneous. The walls of the vessels are thicker than normal, the adventitia having no nuclei and the capillary vessels are plentiful; on account of the latter and because of the increase of cells the process may be deemed of an inflammatory nature. The lamina oribrosa is degenerated and thin. These bodies seem to be composed of homogeneous protoplasm and are probably of degenerative origin. He refers extensively to the literature of the subject and concludes that these bodies are truly hyaline; that they result from degenerative changes of the connective tissue; that despite apparently otherwise normal fundus and vision there is a chronic interstitial neuritis.

Ambiyopia Occurring During Lactation.

HEINZEL (*Beitr. z. Augenheilk.*, Heft, XXI, 1895,) reports three more cases of optic neuritis occurring in nursing women, from the hospital (two) and private (one) practice of Prof. Fuchs:

1. In a woman 34 years of age who had anemia, dysmenorhea, who was otherwise apparently healthy, had complained in seventh week after birth of her first child of pain in head and orbits and of diminishing vision. Examination showed slight tenderness on pressure, grayish infiltration of the papille, retinal veins swollen, arteries small, vision lessened and photophobia. Several days later appearances grew worse. Swelling of disk rose to 2 D. in R. E., 3.5 D. in L. E. Retina about disk for 2 disk diameter became grayish, and V diminished to counting fingers for R. E. at 3 *m.*, for L. E. at 1 *m.* Slight gray atrophy followed, but with useful vision, as patient was able to see small print with both eyes.

2. An anemic woman 22 years of age had miscarriage at seven months; fourteen days before rich secretion of milk set in. Although the child died after nursing half an hour, the secretion of milk persisted for seven weeks, flowing spontaneously. Shortly afterwards she noticed defective vision in the right eye. She complained only of her eyes, which were outwardly normal. The edges of the papillæ were seen to be wooly, the retina in the neighborhood was grayish, the veins larger and

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the arteries smaller than normal, more in the right than in the left. Vision: R., $^{6}/_{12}$; L., $^{6}/_{6}$. Visual field somewhat contracted; under the fixation point of R. E. was a scotoma for red and green. Appearances changed but little during a month of observation and treatment by sweat cure. Vision in R. E. sank to $^{6}/_{18}$.

3. Woman, 38 years of age, otherwise healthy; mother of three sound children. In last three weeks of her pregnancy had headache and few days after delivery had failure of vision. Papillæ were found greatly swollen, with patches of infiltration and small punctiform hemorrhages and new blood vessels near the disk. In three months the vision became $^{5}/_{6}$ and the V. F. normal; the fundus apparently normal except dark irregular discoloration and radiating grayish streaks at the macula. Heinzel thinks that the neuritis in these cases pursued a peculiar course, in that the somewhat intense inflammation resulted in partial atrophy with but little diminishment of vision. He thinks that the cause was autointoxication, due to lactation.

(The first volume of the Hungarian Archives of Ophthalmology contains twenty-three articles from Schulek and his assistants; written from 1874 to 1895, and hence some of these have only an historical interest.)

Sphincterotomia Pupillaris—Sphincterolysis Anterior Apotamia Iridis.

SCHULEK (*Ungar. Beitr. z. Augenheilk.*, I, 1895) in a series of three articles described (1) an operation of cutting away posterior synechie, (2) of freeing anterior synechie from corneal adhesions, (3) of freeing the iris when extensively attached to the cornea; all supposed to prevent the evil results attending freeing of such synechie when done by the forceps. He uses very thin and narrow knives, similar to the Grafe form.

Resection of Superior Division of Trigeminus for Blepharospasm.

OTTAVA *Ungar. Beitr. z. Augenheilk*, I, 1895) has resected this branch of the trifacial nerve with success and safety in three cases of idiopathic blepharospasm in which medicinal methods have failed.

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Treatment of Chronic Dacryocystitis—New Sounds.

NEUPAUER (*Ungar. Beitr. z. Augenheilk.*, I, 1895) slits up the lower canaliculi, presses out the contents of the sac, uses modified conical Bowman's sounds and washes out the lachrymal passages with the Anel's syringe, but with modified fenestrated canalua, by which the canal and sac may be cleansed or injected without causing the liquid to pass into the nose.

Etiology of Pterigium—Operation for Pterigium.

SCHULEK (*Ungar. Beitr. z. Augenheilk.*, I, 1895) in these two articles shows that pterigia arises from irritating causes, such as intense light or temperature and dust, and endeavors to show that the irritating qualities of the ultra violet rays of light (which exist in white light) are an important factor. Most foreign bodies, such as dust particles, remain longest upon the nasal side of the conjunctiva. Pterigia start from infolding of the conjunctiva upon small erosions at the corneal limbus. Continued irritation causes growth. Foreign bodies are frequently found at the point of the pterigium. Pinguecule frequently become transformed into pterigia. The ultra violet rays affect the cornea and conjunctiva by photochemical irritation.

Indications for Eneucleation.

GROSZ (*Ungar. Beitr. z. Augenheilk.*, I, 1895,) gives indications for removal of eyes as follows: (1) Malignant growths (carcinoma, sarcoma glioma.) (2) Danger from sympathetic ophthalmia. (3) Pain, such as is caused by absolute glaucoma. (4) Cosmetic purposes, as in *ecstasia bulbi totalis* and staphyloma, when other operations are not indicated. In Schulek's clinic during ten years 3.5 per cent of all larger operations (8,670) in number were eneucleations (306). Of these 10.7 per cent were done for indication I; 66 per cent for indication II; 9.8 per cent for indication III, and 14.8 for indication IV.

Erythropsia.

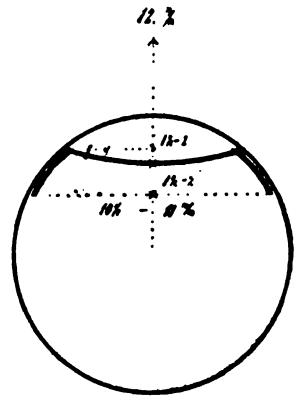
SCHULEK (*Ungar. Beitr. z. Augenheilk.*, I, 1895,) investigated the reasons for erythropsia. He tired his eyes by the ultra violet rays of the spectrum in a dimly lighted room; when passing into the light and looking through a stenopaic slit or

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through his hands partly closed all objects appeared red. Control experiments were also made. He *found that the phenomena were more readily evoked* in aphakic eyes, especially where a large iridectomy had been done, *than in healthy eyes.* He cites the case of a cataract patient who had red vision for five months after the operation. He believes that the cause of erythropsia is not entirely in the retina, but in a measure in the primary brain cells. It appears because the ultra violet centers become tired and allow of overaction of the red. He defines erythropsia as a regenerative condition of the red-green sight substance caused by photo-chemical irritation which has created a condition of exhaustion in the brain cells.

A New Cataract Operation—Instruments for Cataract Extraction—Experiments Upon Corneal Incisions—Cataract Extraction With Concave Incision and Retention of Round Pupil.

SCHULEK (*Ungar. Beitr. z. Augenheilk.*, I, 1895,) in this series of articles describes his own peculiar method and results of cataract extraction. He gives statistics of 1,025 operations, 418 by his and 605 by other methods. A diagram of the corneal wound he is accustomed to make is here shown. He claims that he obtains round pupils in 87.6 per cent, has iris prolapse in but 10 per cent; that he has first class successes as regards vision in 69.75 per cent, and loss of eye in only one instance where his method has been practiced. His instruments are peculiarly his own.



"The Schulek Schnitt."

Hemianopsia Due to a Lesion in the Occipital Lobe.

MEY (*Centralbl. f. innere Medicin*, October 19, 1895,) cites a case and states that a few instances are on record in which injury of the temporal lobe has produced hemianopsia. A boy 16 years of age fell and injured his occiput. There was a compound fracture with depression. The depressed bone was removed by operation. The transverse sinus was found to be

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torn, the cortex of the brain in the neighborhood was contused. The defect in the skull was about the size of a florin, situated at junction of parietal, occipital and temporal bones, the lower boundary being formed by the transverse sinus. The anterior portion of the right occipital lobe was implicated. General condition good afterwards with rapid recovery. A few days later he complained of headache with difficulty of sight and hearing. In two weeks he could hear perfectly again, but vision remained poor. Could not read easily and walking became unsteady. Well-marked left sided hemianopsia with limitation of V. F. and normal fundus were found. Partial improvement in sight occurred, but hemianopsia persisted. Mey thinks that the defective sight and hearing were indirect symptoms brought about by the injury.

Melano-Sarcoma of the Orbit.

ACHENBACH (*Archiv. f. Pathol. Anat. Physiol. u. Klin. Med.* B. II, 1896,) describes a case of orbital growth beginning in the petrobulbar tissues. Most cases in literature report such as arising in the eyeball, mostly in the uveal tract. Very few are reported to have arisen primarily in the orbital tissues. A woman 65 years of age had noticed for several months that the right eye protruded and that there was double vision, which did not disappear under medical treatment with electricity and iodide of potassim. Ophthalmoscopic examination was negative, the vision slightly diminished. Eye was enucleated with a considerable part of the orbital contents. Half a year later the patient was well. Microscopic examination showed a strongly pigmented sarcoma especially rich in cells. The eyeball itself was entirely normal.

Experimental Study Upon Sympathetic Ophthalmia.

BACH, L. (*Centralbl. f. Bakter. Parasitenkr. u. Infektionskr.* I., see also *Archiv. f. Ophth.*, Abth. 1, 1896, January 18, 1896.) Since Deutschmann had brought forth his migration theory in 1889, there had arisen both defenders and adversaries. Bach himself belongs to the latter class, as in his ophthalmological and bacteriological studies he had gone over Deutschmann's work without obtaining any positive results. He had also been unable to find any evidence in support of the bacterial theory in eyes enucleated during or after sympathetic inflammation, although attended by inflammatory changes. He

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could not find communication between the central and peripheral ends of the optic nerve after resection during sympathetic inflammation. Bach does not believe in the migration theory but supports the ciliary nerve view.

Acromegaly With Ocular Symptoms.

NONNE. (*Deutsche Med. Wochenschr.*, IV., January 23, 1896,) at a meeting of the Aerztlicher Verein, Hamburg, February 5, 1895, showed a case of acromegaly in a woman, 41 years of age, who had atypical tabetic symptoms; V. F. normal for white but contracted for colors; beginning optic nerve atrophy with slight diminution of vision; double myosis; diminished reaction of the pupil for light and accommodation; absence of patellar reflex; lancinating pains in both legs; but no other common symptoms of acromegaly.

Nuclear Ophthalmoplegia Complicated With Spinal Disease.

FÜRSTNER, (*Deutsche Med. Wochenshr.*, IV.. January 23, 1896), at a meeting of the Unterelsässischer Aerzteverein, Strassburg, May 4, 1895, described a case in a male, 18 years of age, in whom specific and inherited causes could be excluded, although his mother had paraplegia. He had carried a heavy weight on the right shoulder for some distance and fell down in the street. Since that time has had severe pain in the shoulder and was weak in the arms; has left-sided ptosis and loss of ocular muscular function. Fourteen days before the accident he had double vision; right-sided abducens paralysis existed after the accident. Pupil reacts well to light and accommodation, but the right more slowly than the left. The vision and the fundus are normal. Nystagmus follows examination and after each electrical treatment ptosis seems temporarily less. There is weakness and atrophy of the shoulder muscles, principally of the deltoid. The hand pressure is weak. Muscular reflexes to strong faradism are weak; general sensibility is intact; voluntary muscular contraction such that closure of the eyelids fatigues the muscles quickly. After excluding all possible causes except alcoholism for the temporary double vision before the accident Fürstner thinks that the both affections may be due to the fall and to be of a hemorrhagic nature. This combination is seldom seen.

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Treatment of Strictures of the Lachrymal Duct.

VULPIUS, WALTHER, (*Deutsche Med. Wochenschr.*, VII., February 13, 1896), thinks that more than 50 per cent of cases of lachrymal obstruction arise from hypertrophic changes in the nasal membranes and but few from atrophic rhinitis. Conjunctival affections are not a frequent cause although infection through the canaliculi may arise from plepharitis and conjunctivitis. Constitutional conditions give rise to suppurative disease of both conjunctival and nasal nature from which dacryocystis may result. He believes that most cases of the latter disease can be cured by nasal treatment and remarks that many oculists become skeptical regarding the cure of lachrymal stricture on account of their poor success in treatment. He says that he has accomplished more satisfactory results in his own work than where such cases have been treated solely from the standpoint of the oculist, by the usual dilation with sounds and weak, astringent injections. He refers to the various methods of treating dacryocystitis and stenosis by injection of strong caustic solutions or by weak irrigation treatment, by large and small sounds, by cutting operations in the canal and obliteration of the lachrymal sac and compares them with treatment by permanent styles. He prefers to put in a permanent style of the size No. 4 to 5 Bowan, which is modelled to the length, size and curvature of the nasal duct. It is made of silver wire, gold plated, of a length of 5 to 6 *mm.*, the lower end slightly conical and the upper bent flattened on one side. Before using such he always passes in Bowman's sound and dilates the stricture to No. 4 or 5, slitting the lower canaliculus a little. Only when entirely occluded is the canal to be opened by a straight Weber's knife. A style of this kind may be easily worn not only for days and weeks but also for months and years without irritation, and after a short time the patient does not notice the presence of the wire. It may be necessary to remove the sound for polishing once a month or once in two months. There is sufficient drainage between the style and the walls of the duct to allow of the passage of tears and even for injection. The permanent style treatment is preferable to other dilating methods for both the patient and the physician because it is not at all painful. The only complication which he has noticed in a few cases has been the formation of little polypi at the opening of the canal. These should be snipped away and seldom recur.

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Experiments on the Ciliary Ganglion.

APPELANT, HUGO (*Deutsche Med. Wochenschr.*, VIII., February 20, 1896), at a meeting of the Physiologische Gesellschaft, Berlin, January 24, 1896, reported on experiments on the ciliary ganglion to settle the controversy as to its nature, whether belonging to the spinal or sympathetic system or being a mixed ganglion. He resected the oculomotor nerve at the base of brain before its anastomosis in a number of kittens and killed them from 8 to 14 days later, making dissections, finding that there was wasting of this nerve but no degeneration of the ciliary ganglion. He concludes that the ganglion belongs to the sympathetic system.

The Beginning of the Sense of Sight in the New-born.

STEINER (*Deutsche Med. Wochenschr.*, VIII., February 20, 1896), at a meeting of the Nieder-Rheinische Gesellschaft für Natur und Heilkunde in Bonn, June 17, 1895, had an interesting paper upon observations made on young animals. He found in dogs and cats that on the fourteenth to fifteenth day the visual centers could be excited, as shown by movements of the head following objects. Commonly the dog does not see until twenty-three or twenty-four days after birth, when central vision begins, peripheral vision not coming until about the fortieth day. Von Raehlmann found that children began to see about five weeks after birth, but not to observe objects until about the fifth month, and that the visual centers are not fully developed until this time.

Exophthalmic Goiter Treated by Thyroid Extract.

SILEX (*Berlin. Klin. Wochenschr.*, VI., February 10, 1896), at a meeting of Berliner Medicinische Gesellschaft, January 29, 1896, reported cure of Basedow's disease by thyroid extract. Patient took 6 tablets a day, in all 120 tablets which produced a quick result. Senator had this patient at his clinic but had obtained no improvement.

SENATOR (*Berlin. Klin. Wochenschr.*, V., February 3, 1896), at previous meeting of the same society, January 22, had not as yet seen any result from thyroid extract in exophthalmic goiter. He stated that as the latest theories regarding the causation of the disease showed that the gland's function is

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greatly increased and theoretically we should give substances which would produce an antagonistic action. He excludes sugar and other carbohydrates from the diet and administers iodin.

Cyclops.

LOVINSOHN (*Berlin. Klin. Wochenschr.*, February 10, 1896), at a meeting of Berliner Medicinische Gesellschaft, January 29, reported birth of a cyclops delivered at the eighth month having two eyeballs in one socket half a *cm.* apart.

Pathognomonic Symptoms of Congenital Syphilis.

SILEX (*Berlin. Klin. Wochenschr.*, VII., February 17, and VIII., February 21, 1896), refers to the typical symptoms. The diagnosis is more difficult after the fourth year, especially when complicated by scrofula or rickets. After this time the eye specialist is in a better position to judge of the existence of inherited syphilis than the general practitioner. Fournier reported that the eyes were affected in 101 out of 212 congenital syphilitics. In only eighty-two were osteo-plastic changes noted. In 62 per cent to 83 per cent of cases we find keratitis. Pathognomonic symptoms are often found by the ophthalmoscope. In small children such examination is facilitated and is allowable by ether anesthetization. He considers choroiditis areolata a typical manifestation. In two cases he had made sure of the existence of a liver gumma by the co-existence of this symptom. This was proved on autopsy. The peculiar forms of teeth described by Hutchinson and Knies and cicatrization of the face and membranes are referred to. In discussion Köbner lays weight upon the fact that syphilitic children have many varieties of teeth and that diagnosis is to be made by co-existence of several characteristic lesions. Choroiditis areolata is found after other diseases and the disseminate form is more characteristic. Hirschberg reiterated his statement that choroiditis areolata, serpiginata and disseminata were all believed by him to be results of congenital syphilis.

Historical Account of the Geographical Origin of Trachoma.

HIRSCHBERG (*Berlin. Klin. Wochenschr.*, VIII., February 24, and IX., March 2, 1896), states that the introduction of trachoma in Europe was due to the Egyptian campaign of

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Bonaparte in 1798. The disease had existed for many years before amongst the Mohammedan races and had been prevalent for untold ages in the vicinity of the Nile. It was known to the Egyptians, the Israelites, the Greeks and the Romans. References to authors of antiquity are given.

Inflammation of Tenon's Capsule (Tenonitis) and its Relations to the Distemper of Dogs.

ZIELINSKI, v. NENCKI and KARPINSKI (*Berlin. Klin. Wochenschr.*, IX., March 2, 1896), make observations upon an epidemic of tenonitis of a peculiar form occurring in a family arising from infection from a pet dog with distemper, the dam of which had also had the disease. It appeared first in the servant, from whom three children, a man 32 years of age, a woman and an old man 76 years of age afterwards became infected. The dog was examined and had exudation in the conjunctiva, protruding and immovable eyes, discharge from the nose, sneezing, fever, etc. Cultures were made from the fluid of the conjunctival odema of both the dog and human cases showed leucocytes and a peculiar coccus, the same micro-organism appearing in each case. The symptoms of the disease are the same in animals as in human beings, beginning by malaise and fever, the eyes tearing and being sensitive to light, the conjunctiva somewhat swollen, especially the retrotarsal folds being filled with serum. The eyeballs push forward and are somewhat immovable, attempts at movement causing pain. In animals corneal complication as ulcer and staphyloma or panophthalmitis may follow. There is loss of appetite and vomiting, constipation first, and then diarrhea; catarrhal inflammation of the nasal membranes, pharynx and larynx with dry cough; depression, deafness, blindness and dementia may follow in animals; there is itching of the skin followed by an exanthem something like pemphigus (in animals); the fever is atypical; its course runs three to four weeks. They conclude that distemper can be communicated to the human being and that both the clinical course and bacterial examination show a likeness. It is a contagious disease caused by a micrococcus similar to that of Rosenbach in appearance, but differing in its chemic and biologic relations. The tenonitis is but a symptom of the infection.

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Reflex Effects of Ear Disease Upon the Ocular Motor Apparatus.

URBANTSCHITSCH (*Wien. Klin. Wochenschr.*, I., January 2, 1896), has a most interesting article upon oculomotor reflexes proceeding from the organ of hearing. These generally show as nystagmus, seldom as spasm or paralysis or involvement of the intrinsic muscles. (1) Nystagmus may arise from irritation of the outer, middle and inner ear as well as from the auditory nerve or centers. It is more commonly met with as the oscillatory form and seldom as rotatory. In one case he had seen change from the former to the latter with an increase in the intratympanic irritation. He cites cases of nystagmus and vertigo caused by syringing, more especially with cool water; in one case its development could be favored by powerful turning of the eyes away from the affected ear; case of intra tympanal choleasteatoma upon removal of which temporary bilateral nystagmus and vertigo appeared, symptoms gradually grew better and on cure of the ear affection the nystagmus could no longer be elicited. Inflammation of middle ear and perforated drum head caused by insect in canal has been responsible for the ocular reflex. Temporary nystagmus has followed removal of polypus from middle ear. Hogyes has obtained marked nystagmus by withdrawing perilymph and blowing in air. In Cyon's experiments upon the semicircular canals in dogs, oscillatory movements of the eyes with turning to same side followed irritation of horizontal and anterior vertical semicircular canals. This ceased on severing of the acoustic nerve. Excitation of both nerves causes rolling of both eyes. Cutting of one nerve turns the eyes to one side and cutting of the other straightens them. Cases have been reported where certain notes have caused rolling of the eyes. Nystagmus is of reflex origin though occasionally induced by morbid conditions of the occipital lobes or by thrombosis of the sinuses. (2) Strabismus seldom occurs as an aural reflex. Lucca reported a case with perforated membrane where compression of the air in canal caused diplopia and abduction of eye to same side. The author had seen case of convergent strabismus existing during two years in which there was suppuration from one middle ear which almost disappeared after cure of the ear disease. The removal of a polypus from middle ear in a woman having exophoria caused permanent increase of divergence. (3) Moos

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had seen paralysis of superior oblique following suppuration of tympanum. (4) Gellè records monocular disturbance of the pupil from irritation of outer or middle ear. He has seen temporary mydriasis follow operations, from aural inflammation and from rarification or condensation of air in the canal in cases of perforated drumhead.

Basedow's Disease and Tetany.

STEINLICHNER (*Wien. Klin. Wochenschr.*, I., January 2, 1896), reports a case of bi-lateral Basedow's disease and tetany co-existing in one individual. In a woman 20 years of age at 10 years the thyroid gland had enlarged, reaching the size of an egg, at which it remained without causing any symptoms until one year before admittance to the hospital, when without having fever or mental shock she complained of frequent cramps in the arm and hands, the latter assuming the characteristic position of tetany. She developed amenorrhea, sleeplessness, palpitation, exophthalmos, tremor in hands, which gradually grew worse. Although exophthalmos was present, the Graefe, Stellwag and Mobius symptoms were not found. The thyroid gland projected more than two inches, was uniformly enlarged, hard and elastic. A thrill could only be felt in isolated spots. The trachea was bi-laterally compressed so that at level of fourth ring it was reduced to a sagittal slit one-twelfth of an inch in diameter. The pulse was 144, heart hypertrophied and somewhat dilated. Frequent tetanic spasms of both arms occurred. The dyspnœa increased so rapidly that tracheotomy was done, after which septic broncho-pneumonia accompanied by diarrhea and vomiting occurred. Patient died about three weeks after the operation. At the autopsy she was found to have Basedow's disease with hypertrophy of the thyroid gland, exophthalmos, compression of the trachea by pressure of the struma, tracheo-bronchitis, lobar-pneumonia, atelectasis of the inferior lobes of the lung, acute gastritis and enteritis and acute hemorrhagic nephritis. In the cerebral cortex at the concavity of the right supra-marginal gyrus was a calcified cysticercus as large as a pea. No previous case of existence of both exophthalmic goiter and tetany was found in the literature. He has, however, recently seen two cases of the latter disease in association with cysticerci in the mesial convolutions. His view of the pathology of this case was that the struma was the primary affection and this led by auto-intoxication to the Basedow's disease. At the same time the circulation of toxic material evoked the tetanic symptoms.

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Experimental Parenchymatous Keratitis.

BARRI. (*Wien. Klin. Wochenschr.*, I., January 2, 1896.) Inaugural dissertation in Basel, sought to destroy Descemet's membrane by injecting sublimat solution or chlorin water into the anterior chambers of dogs' eyes or by inserting a piece of glass in the cornea. By these means he produced swelling of the corneal fibers, thickening and lengthening of the corneal elements, following thickening of the endothelium, producing appearances similar to parenchymatous keratitis. He comes to the conclusion that parenchymatous keratitis in man arises from lesion of the endothelium, is characterized by swelling of this membrane and of the corneal elements. Wintersteiner criticises his conclusions, remarking that the clinical course of traumatic cases is not at all like that of idiopathic keratitis, such as occurs in syphilis, and it is not yet proven that there is lesion of Descemet's membrane.

Blepharochalasis (Relaxation of the Tarsal Skin.)

FUSCHS (*Wien. Klin. Wochenschr.*, VII., February 13, 1896) describes a type of disease characterized by great relaxation of the skin of the lids following swelling. The skin loses its elasticity following the changes and shows folds and wrinkles similar to those of old persons on the upper lids between the brows and eyelashes. It is an atrophy accompanied by relaxation of the intercellular tissue, occurring in young persons and those of middle age in both sexes, the earliest in the fourth year and follows an edema of the lids. In most cases there has been no apparent cause. There is dilitation of the fine veins of the skin, and it is sometimes accompanied by a light grade of ptosis. The condition can only be remedied by operation, the best being excision of a strip of skin from the lid. He has tried injection of tincture of iodin and of alcohol with no result.

Hydrophthalmos Congenitus Cured by Iridectomy.

BERGMEISTER. (*Münchener Med. Wochenschr.*, Wiener Briefe VIII, February 25, 1896.) At a meeting of the Wiener Aertzte Gesellschaft February 21, 1896, Bergmeister showed an interesting case of infantile glaucoma which had been cured by iridectomy thirteen years before, when the child was 6 months old. He strongly recommended iridectomy in such cases, as otherwise the eyes are lost.

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ABSTRACTS FROM CURRENT AMERICAN AND ENGLISH OPHTHALMOLOGICAL LITERATURE.

By Charles H. May, M. D.,
of New York.

The Accidents of Lens Extraction.

Charles Bell Taylor, M. D., Nottingham. (*The Lancet*, January 18, 1896.)

"If in consequence of an extremely narrow chamber, mal-incidence of light, unruly conduct of the patient, or other accident, the point of the knife should pass into the pupillary area, and behind instead of in front of the distal portion of the iris, it must be withdrawn and freed before making the counterpuncture, and the section completed with the secondary knife or with the scissors.

"If, in consequence of the premature escape of the aqueous humor or delay in getting in front of the iris, it should obstinately fold over the edge of the blade, so that persistence on the part of the operator would inevitably entail mutilation, then the knife should be turned around so as to present the back of the blade to the protruding portion while the counter puncture is effected; but if there is no objection to a slight iridectomy the knife may be pushed on so as to slice off a small piece of iris, or, by manipulation outside the cornea, the coloboma may be limited to the periphery of that membrane, leaving the pupil untouched and free in the anterior chamber. Iridectomy accomplished in either of these ways is less painful, is less apt to provoke resistance on the part of the patient, and bleeding is less likely to occur than when the iris is withdrawn with forceps and snipped off with scissors in the usual way, This peripheral section of the iris, however accomplished, while preserving the

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pupil, is an effectual preventative of prolapse, and was first suggested by myself with that object in a paper which I read before the International Ophthalmological Congress at the Royal College of Physicians of London when last held at London under the presidency of the late Prof. Donders.

"The wound for extraction should be peripheral, and the flap as large as consistent with safety. The lens starts easily with a large flap, and may on occasion be delivered with the capsule intact by manipulation with two spoons outside the cornea. The peripheral position of the incision sometimes entails a conjunctival flap which may bleed into the anterior chamber, and unless the blood is coaxed out before it coagulates will obscure the field of operation. Prof. Hansen Grut of Copenhagen fears that this blood may prove a source of infection, but if loose and exposed coagula are, as is essential, carefully removed, there is no such danger, and the sanguinious fluid between the lips of the incision will seal up the anterior chamber and prevent prolapse of the iris by insuring almost instant healing of the wound.

"If, as I have seen in cases of extreme myopia with semi-fluid vitreous, the vitreous should escape in quantity and the eyeball at once collapse, it is prudent in certain cases to limit the operation for the time to a slight iridectomy, extracting the lens later through a peripheral linear incision with the spoon.

"If, after completion of the section, from any accident the vitreous of normal consistence should gush forth and the lens sink behind the lower segment of the iris it should be instantly dipped out with the fenestrated loop which I use for this purpose, which is less rigid and more easily manipulated than the ordinary pattern, and which also possesses the unique advantage of assisting the exit of the lens without aiding to its bulk. If the capsule is too tough to permit of incision by the pricker it should be withdrawn whole with the forceps, leaving the iris intact, and the same procedure may be adopted at once after extrusion of the lens if it is evident that the capsule will interfere with subsequent vision.

"If the eye to be operated on is so sunken, or the brow so prominent, that it is difficult with the ordinary keratome to locate the incision with precision, it is well to use the knife with a deep elbow which has been made for me by Weiss for use in such cases.

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"If one eye has been lost after extraction through a corneal incision the chances of salvation for the other will be greatly increased if the incision is limited to the sclera, as in Graefe's operation. It is well, also, in view of the injurious effect which sympathetic irritation may have upon the eye about to be operated upon, to excise the stump of the damaged organ some weeks before extracting on the other, or optico-ciliary neurotomy may be done, with equally good effect.

"I do not hesitate to extract immature cataracts which interfere with vision in persons past middle life, but I am always careful in such cases to facilitate the exit of the lens entire by a large flap, and to avoid as far as possible the subsequent formation of inflammatory products in the pupillary area by limiting the incision of the capsule, as recommended by Knapp, to the periphery only of that membrane.

"If there should be lachrymal obstruction or anything like conjunctival discharge or incrustation on the lids in cataractous subjects, it is most important that a healthy tone should be restored before operating. Pagenstecher destroys the lachrymal sac when there is purulent discharge, and Haab also recommends the obliteration of the puncta by the galvanic cautery. I have, however, found myself that probing (without slitting up the canaliculus) and the use of astringents and antiseptics, especially that most potent of all, nitrate of silver, are sufficient to enable us to extract with safety.

"When it is necessary to excise the iris for any reason during extraction without a general anesthetic, it may be rendered insensible in from one to two minutes by merely dropping a solution of cocaine on to the surface of the wound. Mr. Critchett, to whom we are indebted for the suggestion, conducts the solution into the anterior chamber by means of a grooved curette; but I have not found this necessary, and have always deprecated the injection of fluids into the anterior chamber.

"When, in spite of all efforts to extrude cortex, the pupil remains obstructed, gray and somber, the haloid fossa may on occasion be punctured, in which case the patient is much in the position of one whose lens and capsule have both been removed at one coup with a spoon.

"Of course the most serious drawback to simple extraction is the possible occurrence of prolapse of the iris; as Pagenstecher says: 'The operation is completed beautifully, and

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just as beautifully next day you find that the iris is prolapsed.' This accident is caused by abnormal tension of the eyeball, by sudden outgushes of the aqueous humor, by faulty placement of the incision, by swelling up of the retained cortex and by spasm of the lids. Kalt, of Paris, endeavors to prevent prolapse by suturing the cornea, Galezowski by sealing the wound with an antiseptic wafer, Snellen, of Utrecht, by closing it with a conjunctival flap, and Knapp, of New York, by subjecting his patients to a series of tests immediately after extraction, performing iridectomy in those cases in which the iris shows a tendency to protrude. For my part I am satisfied if the edges of the wound are accurately in position, if the flap fits like a watch-glass and the pupil promptly contracts; in these cases the anterior chamber is reformed at once, there is no gushing of aqueous or prolapse of iris, and, barring accidents, there will be none. But accidents will happen: 'Against stupidity the gods themselves are powerless; hence we are compelled to reckon upon a certain percentage of cases in which prolapse will occur; and, of course, if prolapse were a very serious accident its possible occurrence would be a fatal objection to simple extraction, but it is not a very serious accident. The great majority of the subjects of prolapse are no worse off than if iridectomy had been performed in the first instance, while, if the operation succeeds, then, indeed, the surgeon has something like success—the success which leaves nothing to be desired, which has nothing to fear for the future, and which restores the patient to society, not only with excellent vision, but with eyes which show no trace of operative interference. I presented patients, the subjects of double extraction by this method, to the notice of members of the Clinical Society of London in 1875, to the Medical Society and to the staff at the Royal London Ophth. Hospital, and again to the members of the Ophth. Section at the jubilee meeting of the British Medical Association. Such eyes, according to my experience, bear the wear and tear of life much better than eyes operated upon by the combined method, and, of course, sight is better (one patient on whom I operated for senile cataract twenty-seven years ago is still alive and has excellent sight), and Helmhotz and Donders to the contrary notwithstanding, accommodation is not abolished. I have had patients able to read small print without glasses after extraction, and many more who can

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do so by a slight change in the position of their distance glasses, and all trace of operative interference is so conspicuously absent that patients of mine who have afterwards consulted eminent ophthalmic surgeons have quite naturally escaped detection. Of course, in this operation there is only one wound; in extraction with iridectomy there are two; hence, in the latter case the traumatism and liability of infection are greater. Otto Becker's researches (post mortem) have shown that when iridectomy is done there is always prolapse at the angles of the wound, and the lens capsule, as Mr. Swanzy warns us, is very apt to be trapped in the wound with the combined operation, an accident which never happens with simple extraction. The central and movable pupil, too, of course fulfills its natural function of regulating and excluding rays of light much better than one that has been deprived of a portion of its sphincter, and, as in aphakial animals, compensates for the absence of the lens. If suppuration should threaten after extraction, internal antisepsis, after the method of Vopelius, should be at once adopted."

A Third Table of Ten Thousand Cataract Extractions.

F. M. WILSON, M. D., Bridgeport, Conn. (Trans. Am. Ophth. Soc. for 1895.) The writer has calculated the percentage of loss in 10,000 cataract extractions, the reports of which were published between the years 1879 and 1893. No attempt at selection was made. "So far as I am aware the conclusions of Dr. Noyes in 1879 that 6 per cent loss was a fair average for the surgical methods then in vogue has never been called seriously in question—*i. e.*, before antisepsis or asepsis was much practiced, and before cocain it was possible to collect 10,000 cases of cataract extraction, with an average loss of about 6 per cent.

"I have tried to reason away this deadly uniformity with the results of twenty years ago, but have been entirely unsuccessful. What Virchow calls the 'brute force' of such masses of cases is too great. From the well-known facts of general surgery we can only infer that antisepsis or asepsis must be important in cataract extraction. Laboratory experiments upon animals seem to show the same thing. From my own clinical experience I have come to regard aseptic precautions in cataract extraction as of the highest importance. But I see no escape

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from the fact that the average loss *was* about 6 per cent in 1879 and *is* about 6 per cent now.

Observations on Cocain Anesthesia.

J. JACKSON CLARKE, F. R. C. S., England. (*The Lancet*, January 18, 1896.) The writer gives a number of very useful hints concerning the best method of using cocain as a local anesthic, which though not new, are often disregarded. Though dealing with the question from the standpoint of the general surgeon, his paper is equally instructive to the ophthalmic surgeon. He is prompted to give his experience because he has used cocain very extensively, because he is convinced that in many cases the solutions, whether used for superficial application or for hyperdermic injection, are insufficiently diluted, and finally, because recent improvements in the composition of solutions for hyperdermic use have been suggested.

"*The scope of the method:* As examples of the kind of operations to which my observations relate I may mention the removal of cutaneous tumors, such as rodent ulcers and sebaceous cysts of the scalp, circumcision; the excision of tuberculous glands when free from deep adhesions, etc. * * * The more serious operations are, in my opinion, unsuited to the method on account of unforeseen difficulties and complications which may arise and demand prompt and energetic measures, but in exceptional cases and emergencies—*e. g.*, tracheotomy, cocain may be used. * * * * * * * *

"*Idiosyncrasy:* The smallest hyperdermic dose which I have observed to produce faintness and nausea was one-tenth of a grain; this was in the case of a man 65 years of age. I have found that old people are especially susceptible, and it is advisable in every case to have brandy and amyl nitrit at hand. Probably, as is the case with chloroform, degeneration of the heart is the condition most to be feared. The application of cocain to mucous surfaces has given rise to fatal accidents. It must, however, be borne in mind that many cases attributed to idiosyncrasy have been due to the use of injudiciously strong solutions, or to the injection of the drug directly into veins. With proper care even in regions rich in veins, such as the lower part of the rectum, the method may be safely practiced; thus Ricard has operated for hemorrhoids after producing anesthesia by a 1 per cent solution, the needle being plunged deeply into

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the tissues and gradually withdrawn as the injection was made.

"*Strength of solutions:* For some years I have employed a 1 per cent solution of hyperdermic injection and a 2 per cent solution for mucous surfaces, but latterly, influenced by the experience of Schleich, I have diminished the strength of the hyperdermic injections. Schleich recommends a solution made up of cocain hydrochlorat and sodium chlorid, of each 3 grains; morphia hydrochlorid, one-third of a grain; distilled water to 3 ounces—equivalent to a 0.25 per cent solution. The sodium chlorid was added, since it was found to diminish the pain caused by the injection. Bransford Lewis reports that, using this solution, he has found it possible to anesthetize the corium, but in the deeper tissues the anesthesia was not perfect. This has been my own experience, and latterly I have used a $^1/_2$ per cent solution in removing a rodent ulcer of the nose and in other minor operations with complete satisfaction. It is impossible to keep weak solutions for any length of time without fungi appearing in them; therefore, it is preferable to make the solution fresh from the solid drug for each operation. For this purpose Messrs. Allen and Hanburys have kindly made for me pellets, each containing ♭ grain of cocain hydroclorat and $^1/_2$ grain of common salt. One such pellet dissolved in 3 drams of boiling water gives a sterile $^1/_2$ per cent solution, which is cooled by placing the vessel in cold water or on ice. Tested on myself it produced in one minute complete anesthesia, which lasted exactly a quarter of an hour. When the elastic band was used the anesthesia was complete for twenty minutes, and after the band was removed at the end of this time the anesthesia lasted ten minutes longer.

"*The method of making the injections:* When injections are made for the purpose of anesthetizing the skin, the corium should first be filled with the solution. This is accomplished by using a very fine needle and introducing it almost parallel with the skin. A few drops are injected causing a slight wheal to appear, and after a few seconds the needle is pushed further, and the process is repeated until the whole corium is infiltrated. The subcutaneous and deeper tissues are to be treated in a similar manner. This method has been described in detail by Schleich, but it has been used by many surgeons, including myself, for years. The merit of showing the anesthetic effect of solutions injected into tissues so as to cause pressure on the

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nerves, and the suggestion of making the addition of common salt to solutions of cocain, apparently belong to Schleich. There is, however, a limit to the desirable degree of infiltration. If the wheal produced by the entry of the fluid into the tissues is very tense the parts remain tender and the skin red for over twenty-four hours.

"*Other details:* It need hardly be mentioned that perfect antiseptic precautions should be observed, yet some cases have come to my notice in which subcutaneous abscesses, etc., have followed the hyperdermic injection of cocain. These have been due to the lack of simple precautions. An ideal syringe should be capable of being placed in boiling water with the other instruments, and at the same time should be as perfect as a hydraulic machine. The syringe which I have used for some years without any mishap answers the second, but not the first of these requirements, By using it solely for the one purpose, and by cleansing with a 5 per cent carbolic solution before and after each operation, it has been kept aseptic. It is also kept in an air-tight metal case, which keeps the piston moist. * * * A perfect syringe has, I think, yet to be found.

"*Substitutes for cocain:* Lucas Championnière has recently suggested guaiacol dissolved in olive oil as a substitute for cocain. I have tried on myself a solution of 30 grains in one ounce of olive oil, and find it produces anesthesia, but causes considerable swelling; and, whilst in the central part of the swelling there is anesthesia, there is much smarting at the peripheral part of the area into which the fluid has been injected. The smarting lasts much longer than the anesthesia. I am not, therefore, inclined to try this drug on patients."

The Bacteriology of the Different Varieties of Acute Conjunctivitis in General, and of Acute Contagious Conjunctivitis in Particular.

VICTOR MORAX, M. D., and GEORGE WILLIAM BEACH, M. D., of Paris. (*Archives Ophth.*, January, 1896. The authors adopt an etiological classification of the different varieties of acute conjunctivitis. "The bacteriological study of acute conjunctivitis is far from being completed, but it is already possible to establish a certain number of well defined forms. This affection does not result from the development of no mat-

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ter what microbe." * * * "Thus, in practice, and with the exception of diphtheritic conjunctivitis, the microscopical examination can of itself establish the etiological nature of the affection. The possibility of an accurate diagnosis by so easy a method cannot fail to be considered of the greatest importance. It is our conviction that in many cases it is necessary to resort to a microscopical examination, and that especially when the practice of medicine means something more than mere pecuniary benefit."

The writers then review "what has been absolutely acquired in the bacteriology of different forms of acute conjunctivitis" as follows:

"*Acute Contagious Conjunctivitis:* This is one of the most common forms. It is also called acute conjunctivitis, contagious ophthalmia, catarrhal conjunctivitis, "pink eye." It invariably coincides with the presence of a small specific bacillus, discovered by Koch in the acute conjunctivitis of Egypt, described by Weeks in America, and studied by ourselves in the acute conjunctivitis of Europe. It must not be confounded with the catarrh which accompanies a great number of lesions of the conjunctiva, cornea, and eyelids, and which does not constitute a distinct contagious affection.

"*Gonorrhoic Conjunctivitis:* This includes every form in which the pathogenic agent is the gonococcus (infantile ophthalmia, leucorrheal conjunctivitis of little girls suffering from vulvo-vaginitis, purulent conjunctivitis of adults). In all these forms the discharge contains great numbers of gonococci and in almost a pure state. This is easily shown either by a microscopical examination or in special methods of culture favorable to the development of this micro-organism. The microscopical examination is practically sufficient for making a diagnosis. But besides the gonorrhoic conjunctivitis by inoculation, there is to be seen. and especially in adults, a form which may coexist or not with gonorrhoic arthritis. This spontaneous variety without inoculation has a profuse discharge, and in many cases the gonococcus is not to be found; nevertheless it is not unusual to find it in the secretion of very severe cases.

"*Diphtheritic Conjunctivitis:* It is characterized by the presence of the diphtheritic bacillus. The detection of this micro-organism under the microscope in cultures is the only sure way of distinguishing this affection from forms with pseudo-

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membranes which are caused by other bacilli. The researches of Sourdille, Uhthoff, Elschnig, and our own show that diphtheritic conjunctivitis may have a benign or, on the other hand, a serious aspect. This form alone is affected by anti-diptheritic serum, which has no influence upon a pseudo-membranous conjunctivitis of any other origin. The bacillus of Klebs is easily found under the microscope in the pseudo-membrane. It is often in a pure state, but frequently is found with a few streptococci, and sometimes with intra-cellullar cocci. It is easily recognized from its irregular form and its staining by Gram's method.

"*Pseudo-membranous Conjunctivitis of Streptococcic Origin:* This form is especially seen in children during the declining period of measles and scarlet fever, also, sometimes, independently of any febrile affection. It may accompany impetigo lesions of the face. The evolution of this conjunctivitis is sometimes extremely rapid and the lesions of the cornea that complicate it are particularly serious. For this reason it is more to be feared than diphtheritic conjunctivitis, with which it has long been confused. The conjunctival secretion contains little else than the streptococcus. Microscopical examination and cultures on coagulated serum show the absence of diphtheritic bacilli.

Lachrymal Conjunctivitis of Streptococcic Origin: This affection has been described by Parinaud. It comprises those cases of acute conjunctivitis which accompany the inflammatory periods in strictures of the lachrymal ducts, in pericystitis for example. This form of conjunctivitis, though without apparent lesions of the cornea, may be complicated with hypopyon and iridocyclitis. The scanty conjunctival discharge ordinarily contains a few chains of streptococci.

Conjuctivitis of pneumococcic origin: This is an affection of early childhood, always of a benign character, and usually accompanied with coryza and watery eyes. The scanty mucopurulent discharge, examined under the microscope or in cultures, discloses the presence of encapsulated pneumoccoci.

By the side of these well-defined clinical forms are many others whose bacteriological and clinical study has not been made. Such are for example, infectious conjunctivitis, (Parinaud), etc.

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A Clinical and Experimental Study of the So-Called Oyster-Shuckers' Keritits.

ROBERT L. RANDOLPH, M. D., Baltimore, Md. (*Johns Hopkins Hospital Bulletin*, November, 1895.) From a careful clinical and experimental study of this disease the writer has arrived at the following conclusions:

"1. Oyster-shuckers' keritits may be defind as a traumatic keratitis where the injury is produced by a particle of the oyster shell.

"2. The disease is chiefly remarkable for the rapidity with which the cornea undergoes necrosis at the site of the injury, this area of necrosis being usually very small, owing, no doubt, to the small size of the foreign body. Small foreign bodies of copper, steel and sand usually produce no appreciable keratitis; and even when they lodge on the cornea commonly require several days before they produce noticeable inflammation. On the other hand, the oyster-shucker usually presents a marked infiltration of the cornea at the point of injury within twenty-four hours after the accident.

"3. This decided reaction on the part of the cornea makes the injury a peculiarly dangerous one when a large area is wounded, or when entrance has been made into the anterior chamber, such conditions in my experience being invariably followed by the loss of the eye through panophthalmitis. How often do we see the cornea injured in the same degree by other foreign bodies and still the vision not entirely destroyed.

"4. Bacteriological investigations failed to discover any specific organism, nor did any of the organisms obtained from cases of oyster-shuckers' keratitis manifest any pathogenic properties when introduced into the cornea of rabbits, with the exception of the pyogenic cocci. It is not likely then that the disease is of parasitic origin.

"5. The carbonate of lime, of which the oyster-shell is almost entirely composed, was found to possess qualities irritating enough to call forth a keratitis when introduced into the cornea of a rabbit, and it is more than probable that several other chemical ingredients of the shell would be more or less irritating to the cornea.

"6. It is certain that bacteria always play a part in traumatic keratitis, but it is evident that in this variety of keratitis the cornea is rendered especially susceptible to the effect of

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micro-organisms by the irritating chemical ingredients of the oyster-shell, notably the carbonate of lime."

The Excretory Origin of Certain Forms of Iritis and Cyclitis.

SYDNEY STEPHENSON, M. B., F. R. C. S., Edin. (*The Lancet*, February 29, 1896.) "The practical surgeon knows that most cases of iritis and cyclitis are associated with definite constitutional disorders, such as syphilis, rheumatism, gonorrhea or tuberculosis. Whilst this fact is universally admitted, few writers appear to have allowed themselves to speculate as to the why and wherefore of the connection." The writer makes an attempt to bridge this gap by examining the "excretory theory" recently brought forward by Dr. David Walsh to account for the origin of certain forms of dermatitis and applying it to the eye.

"The main facts of this 'excretory theory' may be thus briefly set forth. Walsh believes that certain inflammatory affections of the skin are due in the first place to local changes set up by the excretion of irritating substances circulating in the blood. In this way he endeavors to account for the eruptions set up in the exenthems, in gout, rheumatism, syphilis and other constitutional disorders, and for the rashes which now and then follow the employment of such drugs as iodin, bromin, capaiba, anti-toxin and tuberculin. According to him this hypothesis is supported by many facts." After giving numerous examples "he suggests that these various eruptions take their starting point from the acute or chronic excretory irritation of the skin. Lastly, it must be clearly understood that the irritant may be either in the shape of specific organisms or their products, of drugs, or of the chemical products of faulty tissue changes."

"For the purposes of argument a first step will be to inquire whether we are justified in regarding the ciliary body as a secretory apparatus." He cites a number of authoritative views of the function of the ciliary body and then demonstrates that the iris and ciliary body are anatomically continuous and may be looked upon as constituting a single structure.

"Syphilis is the commonest cause of irido-cyclitis. Most writers credit the venereal complaint with 50 per cent of all cases. That estimate, however, is too low, especially if the hereditary cases be taken into account. The proportion probably lies nearer 60 per cent. Rheumatism or gonorrhea is responsi-

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ble for most of the other cases, and we shall not be far wrong if we lay 30 per cent to the score of those ailments. The remaining 10 per cent is due to various causes, of which tubercle, gout, malarial and other fevers are among the more important. We are not concerned in this place with traumatic or sympathetic inflammation. In glancing over the foregoing list one can scarcely fail to notice that almost all the ailments named are intimately associated with, if not actually caused by, micro-organisms."

The succeeding portion of the paper is given to substantiate the statement just made. "Two propositions then seem to be clear—first, that most inflammatory affections of the ciliary body and iris are dependent upon a constitutional ailment; and, secondly, that a majority of those ailments are of a bacterial origin. The conclusion follows that most forms of irido-cyclitis result from the action of micro-organisms."

The writer then presents considerable material to show that the immediate cause of these inflammations is to be sought in the vicarious glandular excretion of microbes or their products circulating in the blood or other nutriment fluids of the body.

His conclusions are: "(1) Most inflammatory affections of the iris and ciliary body are the outcome of constitutional ailments, which are in turn due to microbic infection. (2) In certain forms of irido-cyclitis specific micro-organisms have been found in the contents of the anterior chamber. (3) There exist good grounds for believing the proximate cause of all cases of endogenous irido-cyclitis to be the excretion by the ciliary body of micro-organisms or their products. (4) Therefore, bacteriological examination of the aqueous humor might furnish a ready means of detecting an organism in those maladies thought to be of infectious nature, such as rheumatism. It might also lead to a correct conclusion as to the cause of doubtful cases of irido-cyclitis."

Salicylate of Soda in Glaucoma.

Dr. T. Y. Sutphen, Newark, N. J. (Trans. Am. Ophthalm. Soc. for 1895.) The writer reports a number of cases in which the use of salicylate of sodium controlled the pain of glaucoma in a very successful manner; none of these patients gave a rheumatic history. "In looking over the literature bearing upon the treatment of glaucoma, I can find but very little

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mention made of the usefulness of the salicylates, even where there was a possibility of a rheumatic diathesis existing, except as the recommendation was made that any general indication met with should be taken into consideration and treated accordingly. Several years ago when in charge of a case where the patient was suffering great pain in an attack of glaucoma, all other means of relief having failed, I was led to prescribe the salicylate of soda. Much to my surprise and joy, the remedy acted with the greatest promptness, the patient being quickly relieved, and the acute symptoms subsiding rapidly. The eye, though blind, was saved from enucleation. From that time on I have used this remedy with the utmost satisfaction, believing it to be almost a specific for the relief of the severe pain so constant in secondary glaucoma, with or wtthout an apparent rheumatic diathesis, and also in cases where there is more or less supra-orbital neuralgia when the condition of the glaucomatous eye does not demand surgical interference."

Dacryocystitis.

RICHARD TAYLOR, M. D., Louisville, Ky. (*Journal of the Am. Med. Assoc.*, January 4, 1896.) In the treatment of dacryocystitis, the writer believes the use of a lachrymal tube to be the only radical method of treatment. He splits the punctum and then cuts the stricture with a probe-pointed bistoury or a spear-pointed knife with a malleable shank. Lately he has been using a double-edged Graefe's knife, cutting the stricture in several places by turning the knife. Then the tract is cleansed with an antiseptic solution and the lachrymal tube inserted.

"All lachrymal tubes are made on the same general plan, but the one which I have devised is somewhat different. It meets the requirements more fully than any I have yet used. This tube is seven-eighths of an inch long and three-eighths inch angle, and can be made of any size and of any metal. It differs from all others in having a lateral slit on each side of the short end, leaving a duck bill spout with upper and lower blades, both of which are to be beneath the surface of the lids or entirely in the passage and hidden to view. In this way the slit prevents the soft tissues from closing the opening of the tube or hindering the passage of the tears through the tube. It can be worn indefinitely. If the stricture should not be absorbed, or if the dilatation with probes is deemed necessary,

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they can be easily passed down by the side of the tube. I have nine of these tubes now in use. One of these has been worn for over two years without the slightest annoyance, without the knowledge of the patient's office associates, and also without recurrence of the trouble."

Formic Aldehyde in Ophthalmic Practice.

JAMES MACKENZIE DAVIDSON, M. B., C. M., Aberdeen. (*British Med. Journal*, January 18, 1896.) The writer cites a number of cases in which corneal abrasions and ulcers, in two instances with hypopyon, were treated with a solution of formalin 1:2000 or 3000 with most favorable results.

"The results which I have obtained with this substance in the treatment of some diseases of the eye have been so notable that I am induced to publish this short article upon its use. The preparation I am using is Shering's formalin (which consists of 40 per cent formic aldehyde in water forming a stable solution if kept in a well-stopped bottle.) One part of formalin in 2000 or 3000 of water is the strength which I find most serviceable. When I tried it first in hypopyon ulcers it was dropped into the affected eye three or four times daily, and it seemed to be of very little use; but on applying it freely every hour, I have never seen anything act so effectually in these cases."

"The usual antiseptic applications so often fail to benefit such injuries, that recourse has to be had to the electric cautery; and if this is to be thoroughly effectual the focus must be burned out completely, and consequently more or less of sound corneal tissue is destroyed as well; and, while the scar left is frequently wonderfully slight, still no one can doubt that if the process can be at once arrested by local antiseptic applications, the results are even better. My experience warrants me in claiming that in a solution of formalin, 1:2000 or 1:3000, applied freely every hour, we have such a substance. Used in the same way or less frequently as experience may dictate, it acts admirably in abrasions of the cornea, which have become septic and infiltrated, and might or might not go on to suppuration. Another great advantage is that the severe pain so characteristic of hypopyon ulcer is speedily relieved by the formalin solution, which further, is non-poisonous and produces no irritation on the strength recommended. The directions I give to the patient are to lie down, and then with a dropper, or failing

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that, a teaspoon, the formalin solution is poured gradually into the eye, while the eyelids are kept winking, so that its surface will be freely bathed. This is done hourly during the day and at night also should the patient happen to awake. * * * * * * Atropin is only used sufficiently to keep the pupils dilated in these cases. Since using formalin in this way I have not had to use the electric cautery once."

Hysteric Blindness and Pseudo-Meningitis, With Report of a Case Treated by Hypnotism.

HUGH T. PATRICK, M. D., Chicago. (*Journal of the American Medical Association*, February 8, 1896.) The writer gives a detailed history of a case of hysteric blindness and pseudo-meningitis; the patient was a woman 30 years of age; hypnotism and suggestion were used and caused a rapid disappearance of the blindness. Concerning the diagnosis of hysteric blindness the writer says:

"Hysteric amblyopia with contracted field and dyschromatopsia is common, monocular amaurosis is less common and hysteric total blindness is rare. * * * The diagnosis of hysteric blindness is usually not difficult if the physician simply bears in mind the possibility of its occurrence and have a fair knowledge of the symptomatology of hysteria. What may be called the negative symptoms are first to be considered. The pupils are ordinarily normal, the fundi oculi are normal, as are also the cranial nerves; the corneal and lachrymal reflexes are present and the interrupted galvanic current causes flashes of light as in the normal eye; but it must not be forgotton that exceptions have been noted to all these rules. * * * Hysteric strabismus, ptosis, facial paralysis and deviation of the tongue have been obsrved and there is nothing to exclude the possibility of any one of these complicating hysteric blindness."

"In making the diagnosis it is to be remembered that a lesion of the brain may cause total blindness with normal pupils and fundi if the focus of disease be bilateral, situated posterior to the corpora quadrigemina, and large enough to destroy the visual centers or cut the optic radiations on both sides; but a lesion of such magnitude, whether due to hemorrhage, softening, inflammation, abscess or a new growth would cause other and marked concomitant symptoms, and therefore another negative symptom of hysteric amaurosis would be the absence of other

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signs of such a lesion. The positive symptoms to be considsidered would be those of hysteria, but I shall stop at the barest mention of the principal ones. Anesthesia, hyperesthesia, monoplegia, hemiplegia, paraplegia, contracture, tremor, chorea, stuttering and other affections of speech, disturbance of the special senses, convulsions and the general mental state, any of these bearing the characteristics known to belong to hysteria; vaso-motor phenomena, loss of pharyngeal reflex, and especially anesthesia of the conjunctiva and eyelids are to be mentioned and always sought for."

"The mode of onset might be of diagnostic worth; blindness coming on suddenly after great psychic disturbance or gradually as a concentric and increasing contraction of the field of vision with dyschromatopsia, or following an etiological factor sufficient for auto-suggestion, but inadequate to produce blindness otherwise, as a slight traumatism, atropin dropped into the eye or association with a blind person, would indicate the hysteric nature of the affection. But hysteric amaurosis may come on without ascertaining cause (possibly during the night) in a person who has never shown any signs of hysteria and who is found to bear none of the stigmata; that is, the cause may be an example of primary, or initial, mono-symptomatic hysteria. We must then depend entirely upon the negative signs, and it is particularly in these cases that hypnotism may come to our aid in diagnosis as in treatment."

"Hysteric blindness is to be differentiated from that of exhaustion or anemia, and if it follows an injury, especially in the vicinity of the eye, with profuse hemorrhage, the diagnosis might at first be difficult. Neither is the hysteric affection to be confused with the blindness of ophthalmic migraine, that is, migraine with marked disturbances of vision. These consist ordinarily of scintillating or central scotoma, amblyopia or hemianopia, not infrequently accompanied by disturbances of speech. There may also be visual hallucinations or transient blindness."

"There is another psychic blindness that is to be distinguished from the hysteric, although the lines of division may blend in individual cases. This I am tempted to call the blindness of insanity and is simply a delusion entirely comparable to the ordinary delusions of the psychoses. These cases again shade off into those of photophobia, blepharospasm, etc., in which the patient fears the light, can scarcely open the eyes, may believe that he is blind, but can see if he can be made to look."

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ABSTRACTS FROM RECENT FRENCH AND ITALIAN OPHTHALMIC LITERATURE.

By Casey A. Wood, M. D.

A Critical Study of Reid's Portable Ophthalmometer—Notes on Reid's Ophthalmometer by the Editor—Clinical Contributions to the Treatment of Glaucoma by Incision of the Parts at the Iridic Angle—Clinical Observations on the Surgical Treatment of Strabismus—Tetanus Following Enucleation of the Eye—Dislocation of the Lens into the Anterior Chamber and its Reduction by Massage.

A Critical Study of Reid's Portable Ophthalmometer.

The writer[1] has had many opportunities not only of using Reid's ophthalmometer, but of comparing it with the instruments of Helmholtz, Javal-Schiötz and Leroy-Dubois. These investigations have led him to the following conclusions:

1. With Reid's instrument one can eliminate the error, common to all the other instruments, arising from the fact that during the examination the visual line does not always coincide with the central point of the ophthalmometer. The nearer the observer approaches the eyes the easier it is for him to make his observations through the exact center.

2. A marked decentration of the cornea (as seen with Placido's disk), which is not readily detected while using the Javal-Schiötz instrument, is at once noticed with the Reid ophthalmometer, the eccentric corneal area appearing to be round with the former and oval or ovoid with the latter. On account of the greater distinctness of the corneal images in the Reid instrument one can more quickly detect the asymmetry associated with irregular astigmatism and keratoconus.

[1] G. Lucciola. Studio critico sul' oftalmometro di Reid. *Supplemento al Fasc. 4 Annali di Ottalmologia.* Anno XXIV., p. 34.

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3. It is the certainty and precision with which one can recognize the instant of contact of the disc images in the Reid instrument that contributes so much to the accuracy of its measurements. In the Javal-Schiötz and Leroy-Dubois ophthalmometers an exact and distinct image-contact of the borders of the mires is not always possible, owing to chromatic aberration. This difficulty is increased by the fact that only about 2 per cent of the light that falls upon the corneal surface is reflected from it and any movement (*sdoppiamento*) mars still further the distinctness of each image.

4. It has been shown that the results obtained by the Javal-Schiötz instrument, as tested by subsequent subjective examinations, are accurate in the following proportions: In slight degrees of astigmatism according to the rule the ophthalmometer usually indicates from 0.25 to 0.50 D more than the atropinized eye will accept; in the higher grades it may show from 0.50 to 1.0 D less than that found by the subjective examination. In those cases against the rule it is usually from 0.25 to 0.75 too low—a very important fact, inasmuch as that even when the instrument detects no corneal irregularity there may really be present from 0.25 to 0.50 of oblique astigmatism.

Comparing, in the same manner, the readings obtained by the four ophthalmometers, Reid's instrument showed by a small fraction, a smaller error than the Javal-Schiötz. The ophthalmometers of Helmholtz and Leroy-Dubois were less accurate, each giving about the same results but differing, usually about 0.50 D, sometimes more sometimes less, from the Javal-Schiötz instrument.

5. To sum up, the most precise measurements were obtained by the Reid and Javal-Schiötz ophthalmometers. When the variations of these two amounted to 0.25 D, the error of the other two was somewhat more.

6. An important fact connected with the Reid instrument is that it can be used while the patient is lying down or, indeed, when placed in any ordinary position.

In conclusion, the Reid instrument, in consequence of its small size, portability, the precision of its measurements, the invariability of its results, and on account of the fact that its usefulness and efficiency do not depend upon a changeable source of (day) light, constitutes a most desirable addition to our list of ophthalmometric instruments.

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Notes on Reid's Ophthalmometer.

Through the kindness of Dr. Reid himself I am able to append a copy of his original communication[2] to the Royal Society.

Dr. Russell Murdoch, of Baltimore, who, so far as I am aware, has had more experience of the ophthalmometer than any other American ophthalmologist, has been good enough to write to me in answer to some inquiries: "My approval of Reid's ophthalmometer is unqualified. It is, I believe, more scientific and of easier application than the Javal-Schiötz instrument. While measuring with accuracy the astigmatism it at the same time will, with an easily worked and simple formula, give the radii of the two different corneal meridia. Its weak point, in my hands, but not in Dr. Reid's, is the difficulty encountered in determining the exact angle of an axis against the rule. The two images that one looks at are circles, and I find it difficult to tell when they first separate or when they reach the furthest point of separation. Its use is not fatiguing, and when one get accustomed to handling it the work becomes very expeditious. Besides indicating corneal astigmatism it showed, in one case, a small amount of conical cornea, and I have thought, for some time past, that it indicates changes of corneal curvature during the act of accommodation."

Dr. Murdoch has found the instrument of particular value during his investigation of refraction in the eyes of the lower animals.

The inventor's original description of his instrument is as follows: "The object of the instrument about to be described is to measure the curvature of the central area of the cornea, the polar or optical zone; or of any spherical reflecting surface of from 6 to 10 *mm.* of radius. In its present form the instrument can only be applied to the measurement of the corneal surface in the visual line. As this is the area of the cornea utilized for distinct vision, this instrument furnishes all the data practically requisite for the diagnosis and measurement of corneal astigmatism.

"The theory of its construction is based on a particular application of the following well-known optical law: That when two centered optical systems are so combined that their princi-

[2]On a Portable Ophthalmometer. By Thomas Reid, M. D. (Proceedings of the Royal Society, February 16, 1893.)

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pal foci coincide, the ratio of the size of the object to the size of the image formed by the combined systems is equal to the ratio of the principal foci of the two optical systems, adjacent respectively to object and image. The two optical systems in this case are the convex lens of the instrument and the cornea as a reflecting surface, with the object in the principal focus of the adjoining optical system.

Thus:—(*vide* Fig. 1.)

Let MM′ be the convex lens of known focus, A the corneal surface and P′ the point where their principal foci coincide.

Let SP be an object situated at the principal focal distance of MM′, and let XX′ be the principal axis of the system.

Then a ray SM parallel to the axis will, after refraction, be directed to the principal focus P′ of the curved surface of the cornea, and therefore be reflected in the direction IB parallel to the axis XX′. IB prolonged will meet the ray directed to the center C at the point S′; therefore S′ is the image of S, and S′P′ the image of SP, and S′P′ is in the principal focus of the convex reflecting surface.

In the similar triangles MP′O and IP′A,

$$\frac{P'O}{P'A} = \frac{MO}{IA'}$$

SM and IS′, the prolongation of the reflected ray, are parallel to the axis XX′,

therefore $SP = MO$ and $S'P' = IA.$

Therefore $$\frac{P'O}{P'A} = \frac{SP}{S'P'} \text{ or } \frac{O}{I} = \frac{F}{f}$$

$$f = \frac{r}{2};$$

therefore $$\frac{O}{I} = \frac{2F}{r} \quad \text{..... (I);}$$

therefore $$r = \frac{2F \times I}{O}.$$

Description of the Instrument.—The essential parts of the instrument are an aplanatic convex lens of known focus, a rectangular prism neutralized in its center by a smaller prism,

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one side of the rectangular prism being adjacent to the lens and a circular or other disc being opposite the other side in the principal focus of the lens. When the instrument is held in front of the convex reflecting surface with the disc turned towards a luminous source, a virtual image of the disc will be formed at the virtual focus of the convex reflecting surface. This image will only be seen distinctly by the emmetropic eye through the neutralized portion of the prism, when the focus of the lens in front coincides with the virtual focus of the convex surface. The ratio of the object to the image will be as shown above. If now a double-image prism be inserted behind the neutraliz-

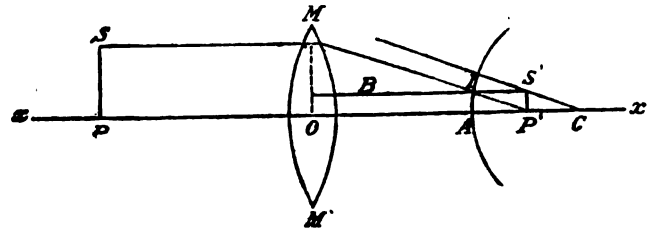


FIG. 1.

ing prism, which exactly doubles this image, its power with the combination is easily determined, and therefore the exact size of the image can be measured. The size of the object being known, we have the three elements necessary for determining the fourth proportional, the curvature of the convex reflecting surface.

The instrument in this simple form presented a number of practical difficulties in its manipulation, which were overcome by the introduction of a short telescope behind, with double-image prism fixed in front of its object-glass.

In its present form the instrument consists of the following parts (*vide* fig. 2[3]):—An aplanatic lens O*b*, a rectangular prism P neutralized in the visual axis by a smaller prism, P^2 and a telescope, with the double-image prism BP fixed in front of the object-glass of the telescope Ob^2. The focal length of the object-glass Ob^2 is precisely the same as that of the aplanatic lens O*b*, and cross wires CW at its principal focus are viewed by a Ramsden eye-piece.

[3]The object-glass has been specially constructed according to the formula of Professor Abbé, and contains barium glass as one of its constituents.

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Before using the instrument it is necessary and sufficient that the cross wires should be distinctly seen at the punctum remotum of the observer. The adjusted instrument is held in the observer's left hand, which rests on the forehead of the patient, the disc being directed to a luminous source to the right of the

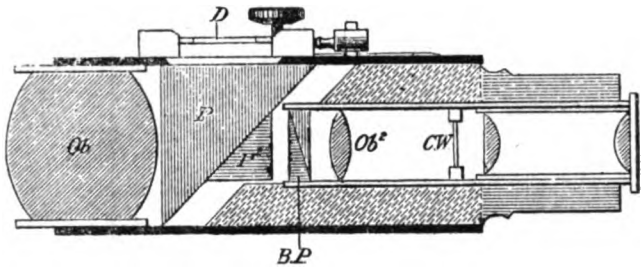


FIG. 2.

observer. The point of coincidence of the principal foci is found by moving the instrument to and fro. When the observed eye is directed to the central or fixation point and his visual line is vertical to the point of the cornea through which it passes, the corneal image doubled and inverted ought to be seen in the center of the field. Instead of using circular discs of different dimensions, the size of image required to produce exact contact in any meridian is conveniently and quickly obtained by making the required change in the size of a carefully constructed iris diaphragm. By using a circular object, the circular, elliptical, or irregular form of the image reveals at once the condition of the surface. 'When the image is elliptical, the meridian of greatest curvature is easily found by rotation of the telescope, and a rotation of 180° gives a controlling observation. By a similar process the meridian of least curvature is determined.

GRADUATION OF THE INSTRUMENT. –Let D be the power in dioptres of the cornea as a refracting surface, with a medium behind it of uniform density having an index of refraction $n = 1.337$ approximately.

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$$D = \frac{(n-1)1000}{r}$$

$$= \frac{337}{r} \quad \text{(II)}.$$

Combining equation (I) with (II),

$$D = \frac{337 \times O}{2IF},$$

$$D + 1 = \frac{337 \times O'}{2IF},$$

$$1 = \frac{337}{2IF}(O'-O).$$

In the present instrument I = 2, and 2F = 52,

therefore $1 = 3.24\ (O'-O)$,

$$\frac{1}{3.24} = O'-O;$$

therefore 1D = rather less than $\frac{1}{3}$ *mm.*

The index is divided into two parts, outer and inner. The outer registers the size of the image, and the inner the corresponding dioptres.

The degree of refinement with which the measurements may be carried out depends entirely on the degree of exactness of determination of the constants, especially I and F. I has been determined exactly to 1/500th inch, and can be estimated to about 1/1000th. The focal length of the oject-glass can be determined by Cornu's method, but in general it is more convenient to measure two curved surfaces whose radii are exactly known, and within the limits of the instrument.

The index error is found by taking the number of dioptres at sufficiently great intervals within the limits of the instrument. In this instrument, if we take the extremes of the index, o = 12 *mm.* and o = 16 *mm.*, we find the corresponding dioptres are 38.9 D and 51.84 D. The index being graduated in thirds of a millimeter, the index error of each division is nearly 0.08 D, which is positive.

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If the double prism be now removed, the image being single, and the pupillary opening generally distinctly visible, it affords a means of determining whether the visual axis passes through the center of the pupil.

It will be seen that this instrument differs from the ophthalmometer of Helmholtz, the most perfect instrument theoretically and practically which has been devised for this purpose, in which, while the object is constant, the image varies with the curvature of the surface, but always covers the same angular interval of the surface. It resembles the *ophthalmomètre pratique* of Javal and Schiötz, in which the doubling is effected by means of a double-image prism inserted between two achromatic lenses of equal focus, so that while the image is constant the object is made to vary. With this instrument, when the difference of curvature of the principal meridians is considerable, amounting to 3 or 4 dioptres, in order to obtain approximately accurate results it is necessary to insert birefractive prisms of different powers, giving images of from 1 to 3 *mm.* In the present instrument the image of 2 *mm.* has been selected as giving sufficiently accurate results for most practical purposes, measuring with precision, as it does, a difference of refraction of half a dioptre. For cases outside the limits already referred to (6 to 10 *mm.*) prisms of suitable powers can be substituted.

The instrument may be had of Mr. W. Hassard, optician, 209 Sauchiehall Street, Glasgow, Scotland, and its cost, in that city, is about $50. C. A. W.

Clinical Contributions to the Treatment of Glaucoma by Incision of the Parts at the Iridic Angle.

Sgrosso[1] has operated upon fifteen cases of simple chronic glaucoma with results sufficiently favorable to enable him to recommend the operative treatment above indicated. He illustrates his text with charts of the visual fields (a few of which are here reproduced) before and after operation, and gives the vision in each instance. His observations of the cases extended over several months and longer.

[1] P. Sgrosso. Contribuzione clinica alla cura del glaucoma mercè la incisione del tessuto del'angolo irideo. *Annali di Ottalmologia*, Anno XXIV., 1896. Fasc. VI., p. 589.

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M. P., 21 years of age, presented, March 8, 1894, in the right eye, simple chronic glaucoma, with a history of slight and transient subacute attacks. V. = $\frac{1}{10}$; T. + 2; F. of V., as in Fig. No. 3.

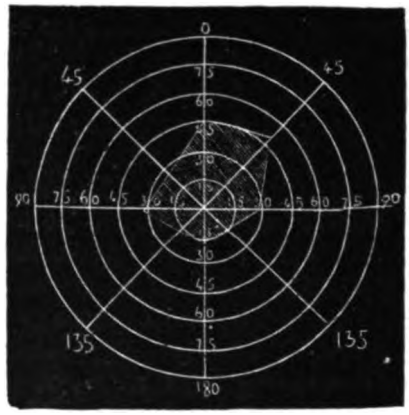


FIG. 3.

After instilling, three times daily, $\frac{1}{2}$ per cent solution of eserin without effect until April 7, an irido-sclerotomy was done.

On April 26, V. = $\frac{1}{8}$, Tn., and F. of V., as in No. 4.



FIG. 4.

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On May 19, V. = ½, Tn., and the visual field as shown in Fig. No. 5.

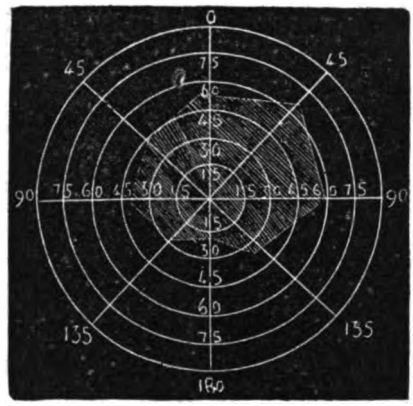


FIG. 5.

The left eye was and is normal.

J. A., 65 years of age, came March 18. R. E. affected with *glaucoma absolutum;* T. + 1. L. E., simple, chronic glaucoma; V. = ½, T. + 1; F. of V. as in Fig. No. 9.

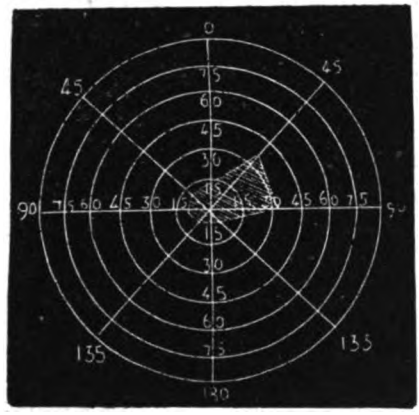


FIG. 9.

March 19. Incision of the tissues at the iridic angle in left eye.

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March 25. V. L. = $\frac{2}{3}$; Tn.; F. of V. as in Fig. No. 10.

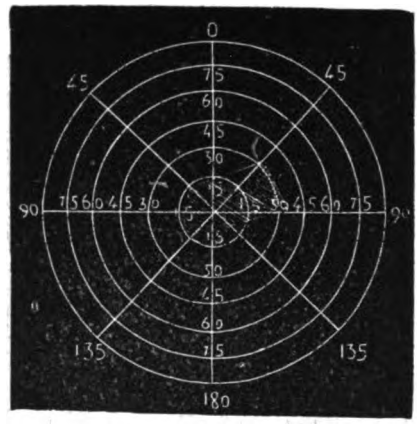


FIG. 10.

March 28. V. L. = 1. with — 1 D.; Tn. F. of V. as in Fig. No. 11.

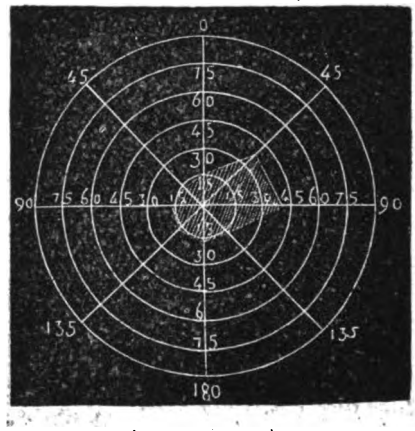


FIG. 11.

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The fifteen histories given include ten eyes affected by simple, chronic glaucoma, two of infantile glaucoma—one of incipient buphthalmos with well-marked granular cornea and other irritative symptoms, the other being a genuine case of the simple, chronic form. The other three were certainly of the simple chronic variety, although they all were the subjects of occasional subacute exacerbations.

In two instances a slight hyphema after the operation followed the partial loss of aqueous, but this was absorbed on the second or third day. In another case a more copious hemorrhage into the A. C. was not reabsorbed until the seventh day after the incision.

In every instance the tension became normal within forty-eight hours, except in one eye, where there was T. + 3, accompanied by advanced intra-ocular changes. In this case T. remained + 1.

In every eye vision improved gradually until about the end of the first month, when it remained stationary.

Of all the eyes thus operated upon only one had a return of the disease, and that one not until the end of the seventh month, and then it appeared in the irritative form.

The writer draws attention to the complete disappearance of the glaucomatous excavation in one case and its diminution in another instance. This was due, in all probability, to the fact of the early operations and to the unimpaired elasticity of the tissues. Another observation (also recorded elsewhere by Sgrosso), worthy of note was the increase of the refraction following the incision in one of the cases. Before the operation it was + 3 D., afterwards + 2 D.—probably due to a shortening of the antero-posterior diameter, the eye having returned to its former size when the intra-ocular tension had been lessened.

Clinical Observations on the Surgical Treatment of Strabismus.

Chapters of this monograph[5] have already appeared at intervals in the pages of the *Archives*, and they are still to be continued. It is hoped that it will be published separately as a late contribution to the literature of muscular anomalies by a writer whose authority on such a subject is unquestioned.

[5] E. Landolt. Observations cliniques sur le traitment chirurgical du Strabisme. *Archives d'ophtalmologie.* December, 1895. p. 721.

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In 1891 Landolt operated on a school teacher with a divergent strabismus of 27°. The result was very good, not only as concerns the correction of the deviation, but in regard to binocular vision, which was re-established. She had a convergent power (as measured by the ophthalmodynamometer) of 13 meter angles.

Three years later the patient returned, complaining of symptoms evidently referable to an *insufficiency of convergence* (esophoria.) The history showed an excessive use of the eyes, and this fact, combined with a good excursion of both globes, seemed to explain the weakness of convergence by supposing an excess of abduction. At that time the maximum amount of convergence measured only 7 *m.* angles.

Instead of doing another advancement the author sought to re-establish the diminished function of the motor apparatus by a general hygienic course of treatment, rest, reconstituents, exercise of convergence and the practice of binocular fusion.

At the same time he prescribed prisms—those temporary expedients, generally of little value, but which, when judiciously used, may be indispensible to the patient's comfort, and may be employed without doing him harm.

The result in this instance justified the treatment. The amplitude of convergence eventually became the same as before the operation, *i. e.*, more than normal:

$$\left.\begin{array}{l} \text{p.} = 13 \\ \text{r.} = -1.5 \end{array}\right\}_{a}^{c} = 14.5 \text{ ma.}$$

The asthenopia disappeared and there has been no subsequent complaint.

Marked insufficiency of convergence he, however, mostly treats by advancement of one of the adductors, but it must first be established beyond all doubt whether or not a particular case belongs to that class where an operation is indicated.

The classic test with vertical prisms and a black dot is not sufficient to enable one to decide the question. Indeed, if we were to rely upon it entirely, few myopes and almost every hyperope would escape an operation.

For a proper examination of a case suspected of insufficient convergent power one must make use of the *dynamometer*, and of a *double prism* provided with the division into meter angles. The *ocular excursions* should be measured by means of the perimeter, and especial attention should be paid to the *refrac-*

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tion, the *accommodation* and the general condition of the patient.

It is only when several examinations have been made at intervals, more or less long, that one can establish with certainty a noticeable defect (several meter angles) of convergence. The majority of these patients recover under a general tonic and hygienic treatment. In those cases, and they are in Landolt's opinion rare, where a reconstituent course is ineffectual, an *advancement of one of the interni* is in order. When done with ordinary precautions there is very little danger either of an overcorrection, or of leaving one pupil on a higher level than the other.

The author very rarely does a tenotomy of an abductor for insufficient convergence, and never without being convinced that the difficulty is really due to an *excess of divergence.*

Tetanus Following Enucleation of the Eye.

Although tetanus may follow a wound of any part of the body it is rare after injury to the eyeball or its annexes. The writer, after mentioning a number of reports (among them one by Chisholm of Baltimore) gives an account of his own case as follows: M. P. B., 22 years of age, came for the first time August 22, 1885. At first sight the right upper lid seemed swollen, but on closer examination with the finger at the superior sulcus a tumor was discovered which was evidently pushing the globe from behind forwards and from above downwards, so that the right cornea was a centimeter lower than in the sound side. Seven days later the tumor was extirpated through the lid and without touching the eyeball. The operation was not followed by any incident worthy of mention. Two months later the tumor, having been examined microscopically, was found to be a sarcoma.

The right eye shortly began to again protrude from its socket until, no longer protected by the lids, it began to suffer. The cornea ulcerated, perforation followed, and atrophy of the bulb was the consequence. On January 28, 1886, both the eyeball and the neoplasm were extirpated and the points of attachment of the latter to the upper wall of the orbit were thoroughly burned with a Paquelin cautery. For four days everything

Santos Fernandez. Tétanos consécutif a l' enucléation de l'oeil. *Revue générale d' ophtalmologie.* Feb. 1896.

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went well; the orbit was thoroughly washed out with a disinfectant solution every day, after which the patient walked out for exercise. On the fifth day he complained of pains at the right tempero-maxillary joint and of a slight difficulty in moving the jaws, which the attendant ascribed to a localized inflammation of the articulation. The latter symptom increase until on the seventh day he was unable to separate the maxillæ. There was complete trismus, pain on pressure over the dorsal vetebræ, and anuria for twenty-seven hours; it was evident that the patient had tetanus. Chloral hydrate was given at once, in increasing doses; friction with turpentine applications was made along the spine, purgatives were administered and a chloral solution was used to wash out the orbital cavity. On the following day the patient could open his mouth and put out his tongue. The temperature never exceeded 37.5° C. His food was bouillon and milk; appetite good.

The dose of chloral was increased; massage was applied to the arms and legs and, as there was some contraction of the abdominal muscles, they, too, were rubbed with an ointment of belladonna and mercury until ptyalism was produced. On the fifth day a facial contraction, on the side opposite the enucleated eye, was observed and on the eighth day of the treatment opisthotonos, with an intermittent heart and coldness of the extremities, supervened. The pulse, before 85, now ranged from 100 to 120 and became irregular. Fifty centigrammes of quinine were then given to the patient. On the tenth day bloody expectoration was observed and on the eleventh day of the treatment the patient died from pulmonary congestion after an apparent improvement lasting three hours.

For the four days before his death 42 grammes of chloral were given every twenty-four hours.

During the whole illness neither the sound eye nor its pupil showed any appreciable deviation from the normal condition.

Dislocation of the Lens Into the Anterior Chamber and Its Reduction by Massage.

The origin and happy termination of a case of dislocated lens are described by Boggi.[7]

[7] P. Boggi. Un caso di spontanea e completa lussazione del cristallino nella camera anteriore. Riduzione col massaggio. *Annali di Ottalmologia.* Anno XXV. 1896. Fasc. 1. p. 7.

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Towards the end of August, 1892, he was consulted by a farmer, 60 years of age, on account of a sudden diminution of vision, noticed in the right eye a few days previously. That his right eye had hitherto had good vision was proven by the fact that he had always used it (and was a good shot) in hunting. He did not know to what he could attribute the change as he had retired one evening, apparently well, had slept soundly during the night and in the morning noticed the visual defect. He had no recollection of any injury, however slight, to the right eye. Of his relatives only one had suffered from ocular disease, and she, a sister, became blind from glaucoma. He had never had any trouble with his own eyes and his health had always been good. He was a heavy smoker but a very moderate drinker and he never had epilepsy, thus excluding at least two of the commoner conditions under which patients labor who receive wounds without being conscious of them.

He had the appearance of a robust man; his eyeballs are somewhat prominent but present the usual shape and dimensions. The lids, conjunctivæ and corneæ are quite normal.

The left shows nothing abnormal except a slight degree of H.

The right eye shows a deep A. C. and gives one the impression that a successful cataract extraction has been performed on it. The iris presents the same appearance as its fellow of the opposite side, but is everywhere tremulous. The pupil is somewhat contracted, but not more so than the other, and is very readily affected by light. Of the three catoptric images of Purkinje only one, reflected from the cornea is plainly seen; the other two pertaining to the lens, are wanting. Oblique illumination also showed no trace of the lens, while the ophthalmoscope reveals a transparent vitreous, normal fundus and measures a high degree of H. Tension normal. There is no monocular diplopia in any position of the head. With + 12 D. visual acuity is almost $\frac{6}{6}$. The diagnosis is *spontaneous and complete dislocation of the crystalline* into the depths of the vitreous chamber.

"I regarded as useless, as well as dangerous, any attempt at extraction and believed it would be better not to interfere as long as the lens was stationary and was not a source of ocular irritation. I accordingly merely prescribed a pair of lenses with a + 12 D. before the aphakic eye. I also atropinized the eye and

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asked the patient to return so that I might discover, if possible, the position of the lens or exclude the possibility of a congenital *ectopia lentis.*"

The patient did not return, however, until about three years afterwards, complaining of the affected eye. He said he had been quite well and had got along nicely with his glasses until September, 1894, when he was seized with violent pains in his *left eye* and left side of his forehead. He applied to Professor Rosmini, who carefully examined him, confirmed the original diagnosis (of dislocated lens, etc.), and advised an operation for the secondary glaucoma from which, he informed the patient, he was suffering. A sclero-iridectomy was done, followed by relief from the pain and a considerable improvement in vision. All went well until the 7th of last March. During the night he was suddenly attacked by severe pains in the *right eye*. He was also found to be suffering from ill health due to chronic gastric catarrh.

On further examination it was found that the luxated lens, for three years concealed in the vitreous, had forced its way into the anterior chamber.

St. pr. O. D.; reddened conjunctiva, marked ciliary injection, transparent cornea; abundant lachrymation. The A. C. is abolished and occupied by a spherical, lenticular, whitish, streated body. T. minus and V. = qualitative perception of light.

Atropia with cocain was at once instilled into the right eye and attempts were made to reduce the displaced body by bending back the head and giving it slight blows. But as it did not return and the pains being increased by this maneuver, Boggi resorted to frequent instillations of eserin and a compression bandage preliminary to removing the lens—as advised by de Wecker.

But the lack of space in the anterior chamber for the manipulation of instruments and the fluid state of the vitreous appeared to contraindicate the proposed operation, and in his perplexity he consulted Prof. Rampoldi, who proposed massage of the cornea, having for its purpose the reduction of the dislocated crystalline. This expert operator succeeded, by pressure and counterpressure exerted with his thumbs upon the half-closed lids, in pressing the lens through the pupil into the posterior chamber. Immediate relief was given; the peri-corneal

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injection disappeared. The pains became less and the patient could count fingers. Through the pupil, irregular and immovable, but once more black, the cloudy lens could be seen below the horizontal plane.

The patient was placed upon his back and eserin instilled until (in three days) the pupil regained its normal size. He was then advised to use it twice a day for some time. With his correction the patient obtained V. of $\frac{1}{2}$, and at the time of writing, nine months after the reduction by massage, he has had no return of the symptoms.

Then follows a literary review of similar histories, Rampoldi being accorded priority in the treatment of anterior luxation of the crystalline by massage of the cornea.

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ABSTRACTS FROM RECENT SPANISH OPHTHALMIC LITERATURE.

By Dr. Albert B. Hale,
of Chicago.

Trachoma in Mexico—Corneal Disease Peculiar to Mexico—Iridectomy in Glaucoma—Meeting of the First Spanish Congress of Otology, Rhinology and Laryngology.

Dr. J. Ramos, in an article recently published in the *Gazeta Medica* (of Mexico), draws an interesting comparison between the conditions found in European ophthalmic clinics and those prevailing in the City of Mexico. He states that trachoma, which he saw so commonly in Germany, is an almost unknown rarity in Mexico (city), and when a good case is found it is enough to attract the attention of the whole resident profession. He draws attention to the fact that among the Mexicans presbyopia begins much earlier than is the rule in Europeans. It would be an attractive study to determine whether this is a true racial characteristic, such as is the early maturity of women living nearer the tropical zone, or whether it is merely analagous to the early senility manifested in every people who live much out of doors, but whose hygienic surroundings are in other respects so improper as rapidly to exhaust the vital powers.

Corneal Disease Peculiar to Mexico.

Dr. Ramos reports a corneal inflammation which appears to be peculiar to Mexico, inasmuch as he never saw an exactly similar case in any European clinic. He would designate it as a *perikeratitis miliaris*. It occurs usually in children and in adults of impaired constitutions, especially during the heat of summer. Its history is not unlike that of conjunctivitis follicu-

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laris. The palpebral conjunctiva is injected, the pericorneal margin relatively less so. There is little lachrymation, no secretion, some ciliary pain and slight photophobia. At the periphery of the cornea are seen minute miliary ulcers looking like needle punctures; these may be preceded by phlyctenules formed by elevated epithelium. The ulcers are best seen by oblique illumination and reflected light. Prognosis is good; treatment that of phlyctenular keratitis.

Iridectomy in Glaucoma.

Dr. Santa Cruz, Director del Instituto Oftalmico, reports that, in his experience, iridectomy is of inestimable service in acute glaucoma, but that in subacute glaucoma the results are less brilliant, while in the chronic form it is of moderate benefit only.

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REMARKABLE IMPROVEMENT OF THE HEARING FOLLOWING OSSICULECTOMY IN A CASE OF OTITIS MEDIA ET INTERNA.

By H. A. Alderton, M. D.,
of Brooklyn, N. Y.

MR. Walter B. P., 29 years of age, watchmaker by trade, had had deafness of the left ear for nine years and of the right ear for five years, which had been stationary for five and three years respectively, with constant hissing tinnitis in both ears. He is of a fine physique, and, barring his ear trouble, is free from disease.

After a thorough trial of the ordinary treatment he accepted the proposed trial of operative interference.

Examination prior to operation gave the following results: Auricles and canals normal, tympanic membranes slightly dulled, otherwise fairly normal; watch not heard on either side, whisper heard 1/2 an inch on the right and not at all on the left side, loud speech heard one foot on both sides, Galton whistle heard at the mark 2.5 on the right and at 2.8 on the left, Weber heard on the left side.

Tuning-fork tests, as arranged according to the writer's *schema:*

		A. S.						A. D.						
Rinné		BC	BC	BC	BC	=	AC	BC	BC	BC	BC	=	AC	Duration in seconds.
Schwabach	AC	11	13	11	15	16	10	11	10	12	18	15	10	
	BC	22	17	13	16	10	2	21	19	13	19	11	1	
Tuning-forks		C^{-1}	C	C^1	C^2	C^3	C^4	C^{-1}	C	C^1	C^2	C^3	C^4	

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From the results of the functional tests it was evident that most of the trouble existed in the middle ear (in the sound conducting apparatus), though the acuteness of the sound perceiving apparatus was slightly impaired.

January 30, 1896, removed the tympanic membrane, malleus and incus of the left ear under cocain (20 per cent) anesthesia, with immediate marked improvement of the hearing; whisper heard five feet, speech sixteen feet. This improvement was almost obliterated by the post-operative swelling and the subsequent discharge. As the swelling and discharge abated the improvement again manifested itself and has increased up to date, though the drum membrane has entirely reformed. The patient to-day, March 23, hears the whisper six feet and speech up to forty-five feet. As a matter of comparison between the condition previous and subsequent to operation, the quoted question, asked in all seriousness, will serve: "*Doctor, are you aware that the elevated railway makes an awful noise?*" The tinnitus was vastly improved. The newly-formed drumhead is grayish, not unlike a thin sclerosed membrane, quite resilient to the touch of the probe and fairly firm and contains no opening.

The writer would lay stress on the fact that the improvement in the hearing has not only been maintained but has increased, notwithstanding the usually considered disadvantageous reformation of the drumhead.

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ABSTRACTS FROM CURRENT AMERICAN AND ENGLISH OTOLOGICAL JOURNALS.

By T. Melville Hardie, M. D.,
of Chicago.

Tuberculous Disease of the Middle Ear.

Milligan. (*Medical Chronicle*, January, 1896.) The occurrence of primary tubercular affections of the middle ear in patients in other respects apparently in good health, has not been extensively noted and it is to this class of cases that the author directs special attention. The paths of infection are the (1) Eustachian tube (2) blood vessels and lymphatic channels of the tympanic mucosa, (3) an existing perforation on the drumhead. Milligan suggests the following which is at any rate novel: "Amongst infants * * * the effects of sucking from the mother's breast or from the feeding bottle, producing as they do, alternately a negative and then a positive pressure in the pharyngeal and post nasal regions, and consequently in the middle ear, with a resulting alternating current of air passing from the one cavity to the other, may be the means of conveying bacilli—introduced either aerially or with the food—into the cavity of the middle ear." We are to remember that in the child the Eustachian tube is relatively shorter, wider and straighter than in the adult. If the disease is acute, rapid cellular infiltration followed by equally rapid caseous disintegration occurs. In the more chronic forms the miliary tubercles early become caseous and form superficial ulcers. Under favorable circumstances a process of fibrous tissue formation may bring the morbid process to an end, usually, however, extension takes place to the bone, cario necrosis results, which may end in opening up of labyrinth mastoid cells or intra-cranial cavity. It must not be taken for

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granted because tubercle-bacilli are not found in the pus that therefore the affection is non-tubercular. Habermann found them in five out of twenty-one tuberculous ears examined. Nathan twelve times in forty cases. In three of these in which extensive caries was present there were no signs of pulmonary phthisis.

From a clinical point of view it is of the utmost importance to know definitely whether a case is tubercular or not. The coexistence of certain symptoms, the sudden onset of a purulent discharge unaccompanied by any of the usual attendants of an acute sthenic inflammation and the occurrence of a perforation covered by a creamy secretion in the center of a pale, œdematous and uninflamed membrane should always excite suspicion. The onset is essentially insidious. Extensive middle ear disease may take place without any perforation of the drumhead. In such cases the first local symptoms are either enlargement of the glands around the ear or the sudden occurrence of facial paralysis. The absence of any reactionary symptoms accompanying the suppurative process is a most suspicious indication of the essential character of the disease. The presence of these symptoms is not, however, sufficient to warrant an absolute diagnosis, and if the bacillus cannot be found in the aural discharges we must proceed to the inoculation test. Following Delépine, Milligan conducted an experimental investigation of ten cases of suspected tubercular otitis media. In each case the mastoid process was opened. A scraping of diseased bone was placed in a sterilized tube and subsequently inoculated into the subcutaneous tissue of a guinea-pig's hind leg. After a few weeks the animal was killed and scrapings from enlarged glands and sections of liver and spleen were examined. Of the ten cases the tubercular nature of the disease was established in eight.

Returning to the diagnosis: In tubercular cases the progress of the inflammatory process is asthenic from the beginning. A point of very great importance is the extensive destruction of bone which occurs at a comparatively early stage of the disease and frequently with little or no external evidence of what is going on. Milligan reports an instructive case. A girl, 15 months of age, had a slight but offensive discharge from both meati. Both external canals were almost blocked by masses of pale, flabby granulation tissue, and the probe showed the pres-

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ence of bare bone. Careful examination of the mastoid processes gave no evidence of any trouble, there being no swelling, no œdema and no pain or percussion. It was decided to open the mastoid cells to secure free drainage from the middle ear. On incision and retraction of the flaps a large fistula filled with soft pultaceous-looking débris was seen. The large cavity into which this opened communicated with the middle ear. A similar condition was subsequently found on the opposite side. Milligan further insists upon the early and frequent presence of facial paralysis in tubercular cases. While not pathognomonic it is always suggestive.

The prognosis is distinctly graver and the younger the patient the graver the prognosis. In the ten cases above referred to the death rate was 62.5 per cent. These were hospital cases and children under 3 years of age. The occurrence of tubercular meningitis is probably at times directly due to extension of a middle ear or mastoid tuberculosis.

The treatment is local and general. Locally free drainage must be secured by early and extensive opening of mastoid and middle ear. The sooner the operation is done the greater chance has the patient to retain his hearing power. A strong search light should be used and meninges and lateral sinus may be exposed without fear. Recurrence may take place even after thorough operation. Milligan operated four times upon one child with complete ultimate recovery and restoration of the hearing power.

Necrosis of the Labyrinth.

CONNAL. (Glasgow *Medical Journal*, September, 1895.) A man, 29 years of age, had severe pain in the left ear, with a purulent discharge, pain and swelling of left mastoid, headache and slight giddiness. The patient had had a discharge from the ear for twenty-five years and two years before had pain and swelling of the same mastoid process. His present trouble was of two weeks' duration. The cavity of the left middle ear was filled with granulation tissue. He was deaf in this ear, not hearing the watch on contact. The sound of a tuning-fork on the vertex was referred to the right ear. After removal of the granulation tissue and syringing, the apex and a part of the central coil of the cochlea came away. The hearing power was again tested with the same results three months later.

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Defects of Hearing and Mental Deficiency in Children.

PERMEWAN. (Liverpool *Medico-Chirurgical Journal*, July, 1895.) The exact facts on these points of deafness and stupidity can only be arrived at by careful examination, Of 1,055 children Von Ruckard found 22 per cent with marked deficiency of hearing. Weil of Stuttgart found it in 30 per cent. Permewan examined in an industrial school 203 children, 10 to 15 years of age; 50 girls and 153 boys. They were all of the neglected class. The hearing was tested with a watch (heard 60 inches), and with a speculum. The presence of enlarged tonsils and of adenoids was also noted. The children were divided into three classes, good, fair and bad in an intellectual sense, according to report of the teachers. Permewan examined the hearing power of both ears, recorded them separately, and then took the mean of the two to represent the comparative hearing power of the child. The result is given in inches. He then added together the mean hearing distances of the three classes of children respectively, divided each by the number of children of that class, and thus obtained the average mean hearing distance of the good, fair and bad children respectively. Of the 203 children:

62, bad, average mean hearing distance, 31¼ inches.
52, fair, average mean hearing distance, 47⅜ inches.
89, good, average mean hearing distance, 51 inches.

Thus the average hearing distance of the very backward children was only one-half of the normal. Of the good it was more than five-sixths of the normal. In 15 of the worst children the record of hearing power is particularly bad.

As regards the presence of adenoids, these were found:

Bad, in 28 out of 62, - - - 45 per cent.
Fair, in 16 out of 52, - - - 30 per cent.
Good, in 19 out of 89, - - - 21 per cent.

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NOTES FROM FRENCH OTOLOGICAL LITERATURE.

By George Morgenthau, M. D.,
of Chicago.

Etiology of the Localization of Inflammatory Processes in the Temporal Bone in Their Relation to the Anatomical Development of the Bone.

Lubet-Barbon. (*Journal of Laryngology*, February, 1896.) In man it is difficult to trace the three primitive divisions of this bone, but in osteites of the temporal bone the inflammation is frequently localized and confined to one or other of these portions. We should not use the term mastoiditis in every case of abscess. Sometimes not only the mastoid is affected but also the squamous portion of the tympanic part, in which case both should be opened. One only of the three divisions of the temporal bone may be affected. Usually in chronic cases the trouble is limited to the point of coalescence of the three divisions of the bone at the level of the antrum. It is to this in the first instance that we should direct our attention in order to work from that point downward and backward toward the mastoid, upward toward to the squamous, forward toward the tympanic.

Auscultation of the Mastoid Process With Regard to Sclerosis.

Okunnief. (*Journal of Laryngology*, January, 1896.) It is most important to determine in a case of chronic suppuration, whether or not the mastoid process is sclerosed. When chronic suppuration of the middle ear is complicated with sclerosis of the mastoid process, it becomes dangerous to life. In sclerosis and obliteration of the cellular structure, the pus in the mastoid process is obliged to work inwards toward the sinuses and meninges. Absence of pain in this form of the disease renders it the more difficult to detect, the high temperature being the only

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clew. In chronic suppurative otitis with sclerosis, the sooner operation is begun the better chance there is for success. Those complicated with sclerosis are usually accompanied with rigors, sweats and headache in forehead or temples. By auscultation, we find that, where there is sclerotic change in the bone, the sound of a tuning-fork placed against the skull is heard louder upon the diseased than the other side of the head, because the affected bone is more compact. When carious spaces of small size are found in a mastoid process with sclerosed bony tissue, the experiment must be tried repeatedly and strict attention given to the slightest dullness when it is permanent.

Cavernous Angioma of the Ear.

MOURE. (*Journal of Laryngology*, January, 1896.) Prof. Politzer writes that the two chief forms of aural polypi found are round cell-polypi and fibromata. Those traversed by numerous blood-vessels acquire the character of cavernous polypi or angiomata. True myxomata are by far the rarest, though angiomas are also rare. Dr. Moure cites the case of a lady 47 years of age, suffering from tumor of the ear, which had caused headache and hemorrhages. An attempt had been made to remove it when a flattened tumor was discovered, presenting a kind of cavity. The peduncle only remained visible upon examination three days after and this almost disappeared under the action of alcohol installations. At the first examination Dr. Moure found a dark red tumor at the opening of the meatus, like a grain of corn in form, on top of another smooth tumor, pinkish-gray in color and globular, to which the first was united, the second burying itself in the meatus and seeming to be inserted near the postero-superior wall of the tympanic cavity. A little yellow pus of faint odor issued around the tumor. Upon passing the snare and avulsing in the usual way, a large quantity of blackish blood poured from the meatus. In spite of pledgets of wool the hemorrhage continued, giving the impression that he had opened possibly into an aneurism of the jugular vein. A fresh iodoform tamponment, kept in the meatus by means of liquid collodion, stopped the flow. On the fifth day the tampon was removed unattended by hemorrhage. The tumor removed consisted simply of a shell with a cavity of the calibre of a large vessel. Histological examination showed it to be an angiomatous polypus, with fibrous portions.

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The Sensitiveness of Deaf Mutes and Their Legal Status.*

OTTOLENGHI. (*Journal of Laryngology*, January, 1896.) From a careful examination of forty-four deaf-mutes the author draws the following conclusions:

1. The deaf-mute, as a rule, is endowed with organic and mental sensitiveness little inferior to the normal; often it is quite normal.

2. It is both just and necessary to reinstate him in civil life and in his penal responsibility.

3. As it has been demonstrated that the sensitiveness of the deaf-mute varies very little from the normal, and as it is known how great an influence the senses have on mental development in all systems of education, we ought to give much attention to "gymnastics" of the senses, not only for the purpose of instruction by the oral method, but because they are one of the most efficacious methods for promoting psychical development.

4. Bearing in mind the individual varieties in sensitiveness in deaf-mutes, it is useful to divide them into different categories for purposes of instruction, in this way assisting the teacher and rendering the instruction more advantageous to the pupil.

5. In view of the conditions of the principal organs of sensation in deaf-mutes, we have a greater obligation to see that they enjoy an education which develops the faculties given them by nature.

6. Both for medico-legal and educational purposes it is useful, and in some cases indispensable, to examine the condition of sensitiveness of a deaf-mute, in order to determine his mental condition.

The Equilibrium Function of the Ear.

CLARK[1] presented the results of recent physiological investigation. The most important of these experiments were by Dr. Lee, of Columbia, on the dog-fish. The cartilaginous skull of this fish permits a careful and almost bloodless operation. The three important points noted were: (1) The motor effects

* Read before the fifth International Congress of Otology, Florence, 1895.

[1] Report of nineteenth annual meeting of the Medical Society of the State of New York, January 28 to 30, 1896. *American Medico-Surgical Bulletin*, February 1, 1896.

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accompanying rotation of the body of the uninjured fish; (2) the effects of gentle pressure on the external surface of the exposed but uninjured ampulle; and (3) the effect of section of the ampullar nerves just before their entrance into the membraneous labyrinth. Thus, on turning the fish 45° to the left on its longitudinal axis, the eyes rotated in the opposite direction. Simultaneous stimulation of the ampulle of two vertical canals on the left side produced the same movements of the eyes.

Certain movements of the fins were also noted on such rotation of the fish; they tended to return the fish, when in the water, to the normal position. After sections of the nerves passing to the ampulle of two vertical canals on the left side, the eyes and fins moved as if the corresponding ampulle on the opposite side had been stimulated. Apparently, therefore, sections of the nerve on one side cut off the normal impulses, and left the normal impulses on the other side unbalanced, giving the impression to the fish of being turned to one side. If, with the head of the dog-fish down, the fish were rotated on its transverse axis, the eyes and fins would move in an effort to return the fish to the normal resting position. Similar results to those already mentioned were obtained on stimulation or division of the ampullar nerves. When the fish was turned on its vertical axis the eyes and fins made corresponding movements, indicating an effort to restore the equilibrium. The speaker said that he had also collected a good deal of clinical evidence to the effect that the semi-circular canals in the human ear functionate in a similar way.

Anesthesia by Guiacol in Diseases of the Ear, Nose and Throat.

GEORGE LAURENS (*Annales des Maladies de L'Oreille, du Larynx, du nez et du Pharynx.* Paris, January, 1896; Vol. XXII, No. 1.) Induced by the good results of the use of guiacol as an analgesic (applications in acute tonsollitis, externally in rheumatism, sciatics, intercostal neuralgia, gonorrheal orchitis, etc., bringing about rapid diminution of the pains and the inflammatory phenomena in all cases), and as an anesthetic, subcutaneously and sub-mucuously administered, in dental surgery and certain surgical operations (opening of abscess, hygroma, fistula in ano, etc.), the author experimented with this drug in operations on the ear, nose and pharynx; no laryngeal case

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presenting itself. The observations extended over only two months and a limited number of instances. Although its value can not as yet be definitely decided, it is well worthy of trial.

Guiacol was dissolved in perfectly pure olive oil in two strengths—1 in 10 and 1 in 20. The first was soon abandoned since the anesthesia obtained by the latter was quite sufficient.

After syringing the ear five or six drops of the warmed oil were dropped into it and left for fifteen or twenty minutes. Then the surplus was removed with absorbent cotton. The nose and throat were painted repeatedly with the cotton-wrapped probes.

In three cases of poracertesis in acute middle ear suppuration the drum membrane was relatively well anesthetized. One patient, very timid and convalescent from a severe illness, experienced but little pain; a second one, although nemopathic, admitted that he had no painful sensation whatever; in the third anesthesia was incomplete, but the sensibility was, nevertheless, greatly diminished. In these three cases the results were favorable, at least equal to those obtained by cocainization. It remains to be seen if this oily solution of guiacol will not moderate the exquisite pain on incising furuncles of the external canal, or affect the intensity of the inflammatory phenomena in furunculosis and acute affections of the middle ear. Anesthesia by this drug in nasal operations, as cauterizations, removal of polypi, etc., required much longer time than by means of cocain. The lower turbinated, for instance, was painted two or three times, energetically, for one minnte; in the intervals a saturated pledget of cotton was left in contact with the membrane. Most of the patients did not complain of any pain; a few, of heat and pressure. A great disadvantage lies in the fact that the tissues do not retract and render a thorough inspection of the nasal cavity easy.

Anesthetizing the pharynx by painting was more difficult on account of the reflexes, but satisfactory. In three children the tonsils could be cauterized without producing pain. It was not successful in attempt to remove a hypertrophied tonsil with the hot snare painlessly. In future it might be advisable to combine painting with the injection of a few drops into the panechyma. In acute and inflammatory affections of the throat it is useful as analgesic. Painting the naso-pharynx on three successive days relieved the irritation and discomfort in swallowing for several hours. In the afternoon the symptoms reappeared,

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but it is probable that repeated applications of a weaker solution during the day would give excellent results.

Perhaps a different vehicle than oil would hasten the absorption of the guiacol and thus do away with the unpleasant feature of the delay in action. There were no outward symptoms, only occasionally a prickling sensation, accompanied by vivid redness, never lasting more than twenty-four hours. Never were there any signs of disagreeable effects on the circulation or respiratory systems as sometimes occur after cutaneous applications of guiacol.

Sero-Mucous Effusion into the Mastoid Process—Evacuation by the Air in the External Canal.

D. A. COURTADE. (*Annales des Maladies de L'Oreille et du Larynx.* Paris, February, 1896. Vol. XXII, No. 2.) It is known that, in acute middle ear affections, the mastoid process participates in the inflammatory process of the neighboring mucous membrane in a great number of cases, if not in all of them. Aside from suppurative mastoiditis producing more or less decided symptoms and demanding immediate intervention, the nature of the mastoiditis is generally unknown. It is probable, at a certain stage of the mastoid involvment that the effusion not yet purulent but analogous to that in the tympanic cavity; but the fact remains to be proven without resorting to an operation on the bone which is useless and unnecessary. Two cases are presented which are in point.

A woman 32 years of age experienced severe pains in the head, nausea and vomiting, while menstruation suddenly ceased, about six months ago. The right drum membrane shows a uniform slight redness and has not lost its gloss. The left is hidden by a white covering of macerated epidermis. On its removal a bulging is seen in the posterior half of the drum membrane. Incision does not allow fluid to escape. On applying Siegle's speculum and pressing the bulb a wave of lemon-colored liquid immediately rushed against the glass; and after three compressions of the bulb the instrument is nearly filled. The liquid was so abundant that medical bystanders asked, loud enough for the operator to hear, if the meninges had not been perforated and cerebro-spinal fluid evacuated. Three days later the patient returned and stated that clear liquid had escaped for thirty-six hours, giving her great relief; she had slept through-

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out the whole preceding night. The patient ceased coming before the otitis media was completely healed, but she left much improved after the last consultation.

A second patient, a woman 38 years of age, had an acute otitis on the left side, without apparent cause, in January. She sought advice only March 19, when suppurative otitis on the left side was found. On April 4 a swelling appeared which extended three inches beneath the left ear backward to the middle of the mastoid; it pitted on pressure; motion of the head was embarrassing and painful.

April 9 compression of the air of the external canal was made with Siegle's speculum, which quickly filled with lemon-colored fluid as in the first case. Preliminary paracentetis was unnecessary, as the tympanic perforation was large enough. The swelling beneath the ear disappeared without operation, and patient was cured of the otitis soon afterwards. The liquid thus evacuated was of lemon hue, of the color of morning urine; threads of mucus in considerable quantity were found. Unfortunately, chemical and bacteriological examination could not be made, because the liquid was thrown away by inadvertence.

It would be puerile to state that the drum alone could contain such a quantity of liquid; it follows that it must have come from the mastoid cells and that communication between the two cavities was broad. The idea that it might have been cerebro-spinal liquid is not worthy of consideration, for everything militates against it. Even if, in the first case, concoction was preceded by paracentesis in the inferior segment of the drum membrane, which could not in any way injure the meninges, even admitting the presence of an extensive dehiscence of the roof of the tympanic cavity; in the second case no operative intervention was made before the expulsion of the liquid. Moreover, the color and the presence of mucus in great abundance suffice to reject such a hypothesis.

Judging from the quantity of the liquid the conclusion is permitted that the mastoid process, in these cases, consisted of large pneumatic cells which communicated freely because diploic or sclerotic tissue could not contain such a quantity of serous fluid in its sinuosities (meshes). Aspiration did not accomplish the coagulation of the fluid, could only be removed by compressing the air in the external canal. The author's attempt to explain this paradox is not convincing.

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TRANSLATIONS FROM CURRENT FOREIGN OTOLOGICAL LITERATURE. (ABRIDGED.)

By H. A. Alderton, M. D.,
of Brooklyn.

Vertigo.

Mendel. (*Deutsche Medicinal Zeitung*, 1895, No. 46.) The attack usually begins in the eyes, many patients perceiving first a haziness or blackness before the eyes, or dilatation and contraction of the pupil may be observed, or, in other patients, the first symptom is double vision; together with these, objects are distorted, be they near or far, above or below.

A condition of anxiety or numbness follows these disturbances, then disturbance of the equilibrium, staggering. In a number of cases as sequelæ appear occipital pain, tinnitis, temporary partial deafness, vomiting, sweating, retardation of pulse.

The author concludes that vertigo originates entirely through affections of the muscular apparatus of the eye.

Meniere's Symptom Complex.

Dr. L. V. Frankl-Hochwart. The author arranges the symptoms according to the following *schema:*

1. Disease occurring in, until then, normal organs of hearing.
   - (*a*) The apoplectic form of Meniérè's—probably from hemorrhage in the labyrinth.
   - (*b*) The traumatic form—as from a blow on the ear.
2. Diseases in the already pathological conditions of the ear.
   - (*a*) Middle ear processes; *a*-acute, *b*-chronic.
   - (*b*) Labyrinthine processes; *a*-acute, *b*-chronic, y-transitory toxic forms.
   - (*c*) Processes in the external auditory canal.
   - (*d*) Diseases of the ramifications of the acoustic nerve; *a*-isolated in Tabes, *b*-in the course of brain diseases.
3. Aural vertigo due to external violence.
4. Pseudo-attacks of Meniérè's, in the neurotic.

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Experiences with Sinus Thrombosis Due to Middle Ear Suppuration.

A. JANSEN. (Volkmann's Sammlung Klin. Vorträge, No. 130.) The author observed twelve cases in 1893, operating upon nine, of which five were cured, one of the last, however, dying later from septic pneumonia.

In thrombosis of the cavernous sinus and of the *torcular herophyli* ensues more easily arachnitis, whose percentage of occurrence (*Procentsatz*) through radical operation has fallen from 38 per cent to 9 per cent. Less influenced are the pulmonary metastases, that appeared in 62 per cent of the cases, in which thrombosis of the jugular occurred.

As concerns the diagnosis, fever can fail, when closure of the jugular exists. Choke-disc is mentioned in the literature in 53.5 per cent of the cases of sinus thrombosis, but in twelve cases of intradural complication it was noticed only three times, in three cases of the cavernus sinus not at all. As a complicating purulent meningitis is not to be distinguished from hyperemia or serous infiltration, so shall their first symptom "as the last warning to the treatment" be esteemed. The diagnosis of extension of the thrombosis to the jugular is made easy, when tenderness and pain in swallowing on the diseased side, hard cord, swelling of the glands and stiff-neck appears.

Affection of the cavernous sinus produces swelling of the "Lider Exophthalmus," disturbances of speech through thrombosis of the a. foss. Sylvii, swelling behind the ear from involvement of the mastoid emissary vein. In all recent cases exists a collection of pus around the sinus. Pressure symptoms, sequestra, phlegmons, infiltration of the soft parts or tenderness only, as well as interference with the movements of the head, especially in the sagittal axis, are in connection with symptoms of brain pressure characteristic of brain-sinus-thrombosis. Their early operation can prevent thrombosis, resp. infection of the sinus. On exposure of the sinus, the color, consistency, perforations, gangrene is to be considered; discoloration alone, with or without existence of movements due to pulsation or respiration is without great significance, "in doubt one employs aspiration."

The results of operations upon the sinus, according to the findings of the Berlin Ear Clinic follows. In twenty-nine cases not operated upon two were cured, in sixteen operative cases

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eight were cured. From general surgical principles is the following necessity explained by an example. It is true we cannot exclude the existence of a purulent secretion back of them or in the condyloid emissary vein or in the occipital sinus, when we come upon a firm thrombosis or fluid blood. With the jugular we cannot go so far, since through that we would increase the danger of infarction. Should the bulbus also be affected, then is the inferior petrosal sinus endangered and this danger is not excluded through ligation of the jugular, on the contrary, in certain conditions increased. As to the value of ligation of the jugular in general, judgment is as yet not settled.

The method for operating for thrombosis is as follows: ⌋ or ⊣ incision (right,) exposure of the bone widely backwards, the mastoid emissary vein is important. The posterior fossa of the skull with the dura is by parallel (horizontal) chiseling exposed, the sinus by vertical chiseling. Finally excision of the sinus wall must follow, in order to provide against recurrence. Then wait; should continued high fever or chills appear, or pus spread to the bulbus, the jugular should be tied near the jugular foramen and the facial vein be tied also.

In the clinical histories that follow, the above views are confirmed. In the first, the author offers an example in which the typical signs of osteophlebitis, according to Körner, existed and the operation demonstrated sinus suppuration. In the patient, Herring, is especially interesting the absence of choke-disc in thrombosis of both ophthalmic veins. In the patient, Wenzel, the author refers the bilateral synchronous nystagmus to an injury of the can. vertic. inf., although the left cerebellum adherent to the posterior petrosal wall was found on autopsy.

Foreign Bodies in the Ear and the Consequences of Attempts at Extraction.

Voss. (*St. Petersburger Med. Woch.*, 1895, No. 23.) Author communicates a case in his practice, in which through improper attempts at removal of a foreign body and the damage contracted therefrom the death of the patient was brought about. The case is as follows: A child 5 years of age, stuck in his right ear a St. John's bread kernel. Four physicians sought, at first by syringing, then, as the same proved without results, with the forceps, to remove the foreign body. After three days the child was brought to the author with a tempera-

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ture of 39°, headache, and pain in the interior of the ear. In the external auditory canal was found a sero-sanguinolent secretion, the canal walls were completely deprived of their cutaneous covering. Believing that the above attempts at removal had failed only through the absence of the use of anesthesia, the author proposed instrumental relief, to which the mother gave consent only after two days had passed. The auricle was turned forward, the posterior osseous wall concentrically enlarged and the sought-for kernel removed, No fall of temperature occurred after operation; drowsiness, coma, convulsions, and death in two days.

Optic Aphasia in Otic Purulent Meningitis of the Left Temporo-sphenoidal Lobe—Recovery.

A. JANSEN. (*Berlin. Klin. Wochenschr.*, 1895, No. 35.) A locksmith, 31 years of age, chronic suppuration of the left ear, suffered, two days before admittance to the Berlin Ear Clinic, with otalgia, headache, delirium and rigors. Examination—Appears very ill, no paralysis, cannot stick out the tongue and utters only the words "thut nicht weh." Pain on moving the head especially in the transverse axis. Tenderness on percussion over tne left mastoid, squama and occiput. Postero-superior perforation leading to the attic, with very fœtid epithelial débris. The absence of symptoms of irritation, paralysis and hyperesthesia, the slight fever, permitted the exclusion of diffuse meningitis and the tranquility, the sensory aphasia and the peculiar deportment the acceptance of a circumscribed affection of the left temporo-sphenoidal lobe. Operation, July 22, 1892—The antrum of the sclerosed mastoid process was necrotic superiorly and posteriorly as well as the tegmen tympani and antri, after their removal the dura of the temporo-sphenoidal lobe was found discolored greenish-yellow, and gangrenous in pieces the size of a mark. The posterior fossa of the skull and sinus normal. Upon aspiration of the temporo-sphenoidal lobe a small drop of thick yellowish pus flowed out of the opening. Incised the dura with the arachnoid and cerebral tissue which had grown adherent to it. An incision 1 1/2 *cm.* deeper gave exit to no pus. The dura was loosened from the arachnoid and cortical substance, which were discolored a yellowish-green and infiltrated with pus. Iodoform gauze dressing. The temperature fell in the evening. Patient shows his

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tongue and speaks more freely, understands almost all questions.

July 27. Clear minded, but objects, whose significance is perceived, can not in part be named (optic aphasia), many also not after touching. He can name written things, read incompletely, recognize objects pointed out, recognize and name colors, Apparently there is "a collection in the connecting tract between the occipital and temporo-sphenoidal lobes, which takes its way through the medullary substance of the inferior temporo-sphenoidal lobe."

On the 29th, could not name pointed out and written objects, adroitly picks out named objects, also no sensory aphasia.

Completely cured January, 1893.

Brief return of the suppuration April, 1894.

In conclusion upon the case the author mentions the possibility through operation still to induce a cure, where in already described pachymeningitis, suppuration of the labyrinth, extradural abscess, sinus thrombosis through dissemination from the infected colony, also easily through "secondary hyperemia and serous infiltration of the arachnoid and the cortical substance in further extension," incurable diffuse purulent meningitis is exchanged.

A Neurosis of the Inferior Maxillary Articulation Simulating Ear Disease.

BRUCK. (*Deutsche Med. Wochenscr.*, 1895, No. 32.) B. describes five cases of otalgia, in which the cause of the localized pain in the ear was found to be a neuralgia of the inferior maxillary articulation. It attacks exclusively patients of the female sex in youth and middle age. B. explains the otalgia as a radiation from the articulating ramus of the auriculo-temporal nerve to its aural ramifications, or as a mistaken attribution of the pain in the joint to the neighboring ear. (Schwartze has attributed the above condition to rheumatism of the inferior maxillary articulation—Grunert.)

A New Instrument to Draw Out the Manubrium in Marked Retraction of the M. T.

LUCAE. (*German Otol. Soc.*, Jena, 1895.) In cases of this kind the attempt has already been made to draw out the manubrium by means of a small hook and thus sever existing synechiæ. Such attempts should only be indulged in cases in which it can be

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undertaken without producing gross damage to the neighboring parts. Any kind of a hook offers no sufficient guarantee of this, nor will the purpose be attained, if without caution insufficient skill is used.

Lucae has remedied this lack by the construction of a small instrument which exerts traction by means of a spiral screw. The mechanical contrivance is very simple. The shaft of the hook passes through a cylinder, in which it is usually held fast by a spring. If one draws on the handle of the screw the hook glides slowly outwards under gradually increased traction. In performing the operation the instrument is introduced with the right hand, the sharp hooklet introduced before or behind the short process, according to the room, and the manubrium gently pulled. Then the cylinder is taken in the left hand and the screw turned with the right hand, thus bringing the hook outwards. The tractive power exerted is read off on a millimeter scale.

Lucae has used the instrument for over a year and has tried it in fourteen cases, of which six were substantially bettered. No inflammatory reaction occurred in any case, and rapid healing occurred with minimum wounding of the M. T., the operation being frequently repeated in the same patient.

In two cases Lucae in repeating the operation did also tenotomy of the tensor tympani, without, however, obtaining any real improvement through it.

Hearing Exercises for Deaf Mutes and for Progressive Hardness of Hearing in Old Age.

PROF. VICTOR URBANSCHITSCH. (With comments by Dr. F. Matte.) The method consists, substantially, in the use of the lute and tones in the immediate neighborhood, the lute freely through air conduction or by means of a concave-sided receiver, and the tones, at first singly, then in words and sentences, by means of an improved harmonica of the author's that embraces six octaves (E 1 to C 4.)

It is a well-known fact that with deaf mutes at their entrance into an institute a certain per centage are found to have tone and noise hearing and even word and sentence hearing, and no case is known in which the ability to hear noises without ability to hear tones to a greater or lesser extent has existed. From this it proceeds that a definite relationship exists between the

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ability to hear noises and the ability to hear tones. Bezold found in 158 deaf mutes 108 with more or less ability in hearing tones and sounds.

An exact functional examination is necessary to the selection of those cases likely to be benfited by these methodical hearing exercises, as otherwise undue hopes are aroused in the patient, his relatives and the public, which cannot be fulfilled. It has been settled by exact investigations that tone-deaf deaf mutes never can be made to hear speech. They can, of course, be taught by the exercise of their muscles of articulation and through lip-reading, to speak.

Foreign Body in the Eustachian Tube.

CAMERER. (From *Archiv. f. Orenk.* Bd. 40, Ht. 1.) The author gives a review of the published cases in which foreign bodies have penetrated the Eustachian tube from the naso-pharynx, external auditory canal or tympanum in which they have wondered in one or another direction or remained in place. In conclusion he presents the following observation from Wagenhäuser's clinic. A boy 6 years of age, with otorrhea of the right side for one year, has lately had frequent hemorrhages from the ear. Canal was filled with inspissated, offensive, brownish, purulent secretion; in the fundus, firm red granulations and posteriorly roughened bone. Further the sound encounters a hard, movable object, which appeared, after extraction, as a $4\,^1/_2$ *cm.* by 2 *mm.* piece of straw. Healing occurred shortly through insufflation of boric acid.

Anamnesia: The child had fallen from a wagon one year and a quarter previously, and thereby driven a piece of straw into the mouth, a small piece remaining stuck in the throat was at that time taken out. Swelling of the right side of the throat and otorrhea appeared one month after. A cicatrix existed on the glosso-palatine arch.

In all probability the foreign body had penetrated at this point and then directly or after perforation of the inferior-anterior membranous wall of the tube, through muscular action was worked into the tympanum.

Report of the Proceedings of the Hungarian Otological and Laryngological Society.

L. POLYAK. (*Archiv. für Ohrenh.* Bd. 40. Ht. 1.)

1. Böke—Case of sinus-phlebitis. The case presented

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as worthy of notice during life, intact mastoid process insensitive to pressure, whilst the least touch along the entire length of the sterno-cleido mastoid gives rise to the greatest pain; the jugular was easily felt and the size of the little finger. Autopsy: An abscess the size of a nut on the under surface of the right cerebellum was filled with brownish-gray thick pus, the white substance in the neighborhood being softened to the consistency of pap. The tympanum was intact, the inner wall of the sigmoid fossa spongy, in the neighborhood of the jugular foramen a perforation 2 *cm.* wide; the right sigmoid sinus was filled in part with a broken-down, reddish-brown, dirty thrombus, remnants of which were adherent to the wall. Similar changes were also evident in the internal jugular vein. Metastases in the lungs, necrosis of the pleura, bilateral fibrino-purulent pleuritis, parenchymatous degeneration of the liver and kidneys, icterus.

2. Böke—Operative removal of a foreign body in the tympanum.

Report of a case in a child 3 1/2 years of age in which, through injudicious attempts at removal a fatal result was induced, notwithstanding that B. finally succeeded in extracting the foreign body.

3. Krepuska—Primary Carcinoma of the external auditory canal.

The carcinoma, in a woman 62 years of age, grew upon the left ear from the soil of a chronic eczema. At first granulations, with bloody and purulent discharge, appeared on the cartilaginous portion of the ext. aud. canal. The tumor broke through the anterior inferior bony canal wall and attacked the retro-maxillary region. Later, on attempting extirpation, the inferior canal wall was found almost completely defective, the tumor had extended into the spheno-maxillary region and up to the posterior portion of the naso-pharynx. Finally the tympanum was involved, the hammer being converted into connective tissue, deprived of all bony elements and the tissue filled with carcinomatous pearls; the incus, completely imbedded in the carcinomatous mass, was only carcinomatous here and there on the mucous membrane covering. The origin of the carcinomatous degeneration as shown in the histological investigation, was partly in the excretory duct and partly in the gland proper of the ceruminous glands.

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4. Lichtenberg—Case of mastalgia (neuralgia of the mastoid process) with operation and cure.

Reports the cure of an intense neuralgia of the left mastoid process, of three months' duration, in a girl 16 years of age by total extirpation of the mastoid process. The permanence of the cure was confirmed by observations extending over six months. Three months later a similar operation for the same cause was performed on the opposite side.

5. Tompka—Tinnitis aurium perceived objectively.

A characteristic intermittent sound was heard at the distance of 1 *m.* from the right ear of a child 6 years of age, which the author believes was produced through the contraction of the tensor veli-palati.

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DISEASES OF THE ACCESSORY SINUSES OF THE NOSE, WITH DEMONSTRATION OF SPECIMENS, DRAWINGS AND INSTRUMENTS.*

By J. W. Gleitsmann,
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IT is not my intention this evening to give you a complete description of the symptomatology and therapeutics of the diseases of the accessory sinuses, a paper which would greatly transgress the limit of the allotted time. and not be suitable for a society like ours. You also will not expect that I can relate to you many new facts, as the subject has already been investigated and described by many authors, and not least by our American confreres. I selected this subject partly because to my knowledge it has not been treated of in our meetings before, partly because the observation is so frequently made, that patients present themselves for treatment, who suffer for months, even years, till they are induced to seek relief. I further intend to show you with the help of some specimens and drawings the way to a correct diagnosis, and enable you thereby, not only to recognize the simpler, less complicated lesions, but also to treat them yourselves. It is a great advantage, if the more obvious affections of these parts are recognized

*Read at a meeting of the German Medical Society of New York, March 2, 1896.

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in time, there always will remain a large number of cases, in which it is difficult to determine the locality of the lesion and which will be a severe test to the patience and perseverance of the physician. As the *anatomical relations* are rather complicated and somewhat beyond the limit of our usual work, you will allow me to recall them briefly to your memory, before passing over to the subject proper. I show you first a skull, divided by seven cuts, with an extraordinary development of the accessory sinuses, especially of the frontal and spheroidal sinuses, through whose exits probes are introduced. You can see the whole extent of one maxillary sinus, as the outer wall has been removed. I further brought several specimens with me, which show the ethmoidal cells not visible in the skull, and the accessory sinuses of different configurations and covered with their natural membrane. The three drawings finally, which are suspended on the blackboard and which I have had considerably enlarged, are selected from three atlases and show the different relations the sinuses bear to themselves.

The *etiology* I shall touch upon only briefly, as my paper is principally confined to symptomatology and treatment. Infectious diseases: Measles, scarlatina, typhoid fever, diphtheria, etc., especially influenza, contribute largely to the origin of sinus diseases, which have been more frequently observed during the last few years of epidemic influenza. Traumatism, carious teeth, syphilis, form a predisposing element, also common coryza and sometimes surgical interference.

The *pathological* changes are either a catarrhal affection of the mucous membrane with hyperemia, swelling and secretion of a serous exudat (hydrops), or most frequently a chronic inflammation with purulent secretion. We observe further proliferation of granulations, caries of the bones, also tumors especially in the maxillary sinus, which greatly enhance the difficulty of a diagnosis.

Symptomatology. The diseases of the accessory sinus have a certain number of symptoms common to them all, which will be enumerated first. In many cases the patients'

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complaints are very slight, and the diagnosis of the presence of disease can only be made by an exact anamnesis and a careful examination, but generally we notice painful secretions and disturbances of the nervous system. Most frequently we observe headache, and sometimes its seat points to the locality of the affection. The pain is felt in the region of the nose, the forehead, the temporal bone in affections of the maxillary sinus, in the frontal bone, the glabella in such of the frontal sinus. Disease of the spheroidal sinus causes pain in the occipat, such of the ethmoidal cells in the inner part of the orbit, in the temporal region. But the seat of the pain does not allow a positive diagnosis, as the regional lines are not accurately defined, and as several sinuses can be affected at the same time.

Besides headache almost all nervous and mechanial disturbances, which we observe in other nasal troubles, can be present. Of the former may be mentioned vertigo, drowsiness, pressure-sensation in the head, inability, disinclination to work, aprosexia. As a curiosum I refer to the often quoted case of Grünwald, who treated a saloonkeeper for ethmoidal spheroidal empyema. The patient could not tolerate any alcoholica, and had to confine himself to drinking water, but after relief from his disease he was able again to meet all the requirements of his business. The mechanical disturbances are similar to those which we observe in obstructive lesions of the nose, as in hypertrophic rhinitis, pronounced deviation of the septum, polypi; and are due to impeded nasal respiration with its consequences, to which I do not need to refer here any further. In some cases the olfactory sense is lost, in others it is perversed, bad odors are perceived and kakosmia exists. We need not wonder, after what has been said that patients are frequently complaining of throat trouble, but sometimes the stomach also becomes affected, when pus runs from the posterior nares down the throat during sleep. Avellis recently described the case of a patient, who called on him on account of gastric ailments, which were cured by treatment of an accidentally discovered maxillary empyema.

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The most morbid symptom found at the examination of the patient is the presence of pus in the nose. The secretion of pus is generally unilateral on account of the more frequent affection of one side only, bilaterally when sinuses of both nostrils are diseased, or when the pus runs through the posterior nares into the other healthy nostril. The secretions can also be permanent or intermittent, the latter when the exit of the sinus is temporarily obstructed, or when the pus seeks an outlet from the overflowing cavity. It is, therefore, in many cases advisable, to change the position of the head, downward or forward or laterally, to make the pus appear in the nostril. Sometimes patients themselves make the observation, that pus flows from their nose when bending the head downwards, which condition greatly strengthens the diagnosis. For chronic formation of pus or with exception of accessory sinus disease is only found in infectious dyscrasic diseases, traumatism, foreign bodies and the like. Of great importance is the locality at which the pus appears, a subject which will be referred to when speaking of the diagnosis. Different symptoms are caused by latent empyemata, which are of rarer occurrence. The pain, especially in empyema of the frontal sinus, is severer, the symptoms and sequelæ are of greater importance. Whilst we have now different means to recognize an empyema of the antrum, and a diagnosis was only made not much over a decade ago, when there appeared a swelling of the face on the corresponding side, when there was protrusion of the inner or anterior wall. In frontal empyema a softening of the bone often occurs and a tumefaction is seen at the inner angle of the orbit. In some cases of ethmoidal empyema the eye is pushed outward, downward, we observe exophthalmus, diplopia, which is the reason that these latter two affections are frequently seen by oculists. Sometimes these empyemata perforate the skin and abscesses form. Frontal and ethmoidal empyemata deserve our fullest attention on account of the importance of the neighboring organs, and several deaths have been reported from extension of the inflammatory process to the cranial cavity from brain abscess.

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Diagnosis: The history of the patient well informs us in the majority of cases which side is diseased, as bilateral affections are less frequent and cause ailments in both nostrils. The inspection of the face will reveal swelling, edema, infiltration of the skin, if such are present. When suspecting frontal sinus disease we will exert pressure upon the anterior wall, tap the glabella, a proceeding recently quite warmly recommended. When this manipulation excites pain or increase of the headache in consequence of the inflammatory thickening of the periostema, an affection of the frontal sinus is almost certainly present Examination of the buccal cavity, especially of the teeth, nose and rhinopharynx follows next, after which we will proceed to use translumination. Although the value of translumination has been somewhat overrated, it ought never to be omitted, as a positive result confirms a doubtful diagnosis. Translumination having already been demonstrated before this society I shall not discuss it at length, but wish to draw your attention to a few erroneous conclusions apt to follow its use. In some cases the quantity of pus in the antrum is so small that both sides of the face are equally well transluminated, in others the cavity can by irregular development or growth be so small that it appears dark, although it may not be diseased. Tumors of the maxillary sinus, which are sometimes observed, give the same result. Less satisfaction has been derived, at least in my hands, from transillumination of the frontal sinus.

The most important and constant symptom of all diseases of the accessory sinuses is the presence of pus in the nasal cavity. The pus appears in affection of the maxillary frontal sinus and the anterior ethmoidal cells in the hiatus semilunaris in the middle meatus, often flowing downward and covering the inferior turbinated. These three cavities have their outlet in the semilunar hiatus, viz., the frontal sinus anteriorly, running upward almost perpendicularly, then the anterior ethmoidal cells and posteriorly the maxillary sinus. In affections of the spheroidal sinus and the posterior ethmoidal cells pus is found at the posterior tip

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of the middle turbinated and at the septum in the posterior nares, or it appears between the septum and the middle turbinated anteriorly, when it is readily seen at anterior rhinoscopy. There are quite a number of exceptions to this rule, of which I shall enumerate only a few. In frontal sinus disease the pus can burrow through its inferior wall, and also appear between septum and middle turbinates by an accessory opening. Further pus from the maxillary sinus can be forced backward by a hypertrophy of the middle turbinated and presents itself in the choana. Finally, the whole nose can be filled with pus and crusts to such an extent that only a prolonged observation enables us to determine the source of the secretion. The same condition will be found in simultaneous disease of several sinuses.

After having established the presence of pus we ought never to omit an attempt of probing the openings of the different sinuses, which although in the majority of cases difficult, is a great help to diagnosis when successful. We can then see the flow of pus from the exit of the sinus, select curious places, also sometimes inform ourselves about the condition of the sinus itself. We will most frequently succeed in probing the maxillary sinus and can follow it up at once with an exploratory irrigation. Probing of the frontal sinus is more difficult, often necessitating the previous ablation of the middle turbinated. The distance from the anterior nares to the frontal sinus is 7 to 8 *cm.* Probing of the ethmoidal cells from the natural openings is almost impossible, and, if necessary, best accomplished by perforation of the upper wall of the middle meatus with a stiff probe, or by carefully sounding the middle turbinated for detection of caries. The sphenoidal sinus is reached by introduction of the probe between the septum and middle turbinated a little above the latter's lower tip. If the probe is gently pushed back and upward to a depth of not less than 8 *cm.* in males, 7 *cm.* in females, we can assume that we have entered the sphenoidal cavity.

From the foregoing we will generally derive sufficient information to make a diagnosis of the diseased sinus and

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to justify us to open it. If, for example, translumination shows one side of the face to be darker than the other, if the teeth are carious, and if pus appears in the middle meatus, we will first attack the maxillary sinus. In ethmoidal disease the condition of the middle turbinated is of great diagnostic importance. The middle turbinated can be hypotrophied, show soft hypertrophies of the mucosa, present cystic enlargement, completely filling the middle meatus, its surface can be smooth or uneven. The latter we see especially when polypi are present in the nose. When the whole turbinated, as it often occurs, is seemingly impregnated with polypi, it can not be denied that they emanate from the ethmoidal cells, and that the thorough cleansing and curetting of the cells is necessary to a permanent cure of the polypi. Some authors go so far as to make the appearance of polypi always dependent from ethmoidal disease, an opinion to which I can convert myself. We can cure many cases of nasal polypi without attacking the ethmoidal cells, which would be impossible if polypi always originated from ethmoidal disease.

I shall not enter at length into a description of the more difficult cases, and only give two examples. Disease of the ethmoidal sinus can exist with a perfectly normal middle turbinated, which greatly enhances the difficulty of diagnosis. Further cases have been reported in which the frontal sinus drained directly into the maxillary sinus. Pus made continuously its appearance in the antrum after it had been opened and cured, till the abnormal communication between the two sinuses was finally found.

The *prognosis* shall be treated of only briefly. In acute cases a few irrigations sometimes effect a cure, and I have succeeded in curing an affection of the antrum this winter with one irrigation only. But such occurrences are an exception, and all chronic cases—and such are by far the majority—need a longer treatment, often extending over months, even one to two years. The prognosis is generally favorable, but, as already mentioned, dangerous symptoms, even death can take place in consequence of disease of the ethmoidal, frontal or sphenoidal sinus.

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Treatment: When we have sufficient reasons to believe a sinus diseased we will naturally treat it first before going further. But if we can not decide about the locality of the disease I have always found it best to adopt the method laid down in Moritz Schmidt's excellent text book, by which we successively open one sinus after the other, and which at the same time shows us the way to open and to treat the different cavities. I shall follow here his description in general, but with the large material on hand and the advanced time, enter more fully only into the said operations, which can be made by everybody who knows how to use the rhinoscope and has the necessary instruments. The more difficult and severe operations will only be mentioned briefly, as they require a large instrumentarium and anticipate a complete familiarity with the affections of these parts.

When speaking of the diagnosis, irrigations of the maxillary sinus through the natural opening were already alluded to. If we are unsuccessful it will not be very difficult to perforate the lower meatus with the syringe devised by Moritz Schmidt and to gain access to the cavity in this manner. But the syringe ought to be introduced somewhat farther back, as we are usually inclined to do, because the sinus is reached at the middle of the inferior turbinated, where the bony wall is thinner, when the point is directed slightly upward. The syringe, inserted in this manner, reaches the upper part of the maxillary sinus, but if the antrum is not entirely filled with pus, none will appear at withdrawal of the piston. When we inject thus several syringes full of weak aseptic solutions and push the piston to and fro, the outflowing fluid will become cloudy when pus is present.

Heavier trokars are also recommended for the opening of the maxillary sinus from the inferior meatus, and you see here the trokar of Mimlig and the case of Krause, containing a trokar, a powder-blower and a canula for the frontal sinus. The large opening made by these trokars allows of permanent treatment of the sinus by irrigations, insufflations of powders, etc. But the aperture has a great ten-

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dency to contraction, the patient can not well treat himself, curettment, which is often necessary, is almost impossible —reasons which prevented the operation from gaining general favor.

In obstinate, chronic cases it is preferred to make the opening from the alveolar process or through the canine fossa, by both of which methods the lower part of the sinus is reached and drainage materially facilitated. The region of the second molar is generally selected for the alveolar opening and it is quickest effected by a trokar driven by the electric motor. If the teeth are sound and must not be sacrificed, we enter through the canine fossa by incising a fold of mucous membrane and chiseling away the anterior wall of the sinus. The opening thus made can be enlarged to any desirable size; we can thoroughly curett the swollen, degenerated mucous membranes, explore the cavity with the finger, sever existing cicatricial bands and inform ourselves if the sinus is divided by a partition wall into two cavities, as sometimes occurs. This operation is severer than the opening from the alveolar process, and the latter will suffice for the majority of cases. Introduction of iodoform gauze, alternating with irrigations, which the patient soon learns to make himself, insufflation of powders, as dermatol, iodoform, iodol, constitute the after treatment. The wearing of an obturator is recommended when operating through the alveolar process.

If we have reasons to believe the maxillary sinus to be healthy and if pus appears in the middle meatus, we have to decide to open either the frontal or ethmoidal sinus. From what has been said in the chapter on diagnosis, we will generally be able to form an opinion. We will consider on one side the condition and aspect of the middle turbinated, the result of a thorough exploration with the probe, on the other the sensitiveness, pain of the glabella, against pressure, we will also attempt to probe the frontal sinus, if necessary after ablution of part of the middle tubinated. But if in spite of all we should not be able to reach a conclusion, I would prefer to open first the ethmoi-

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dal cells, an opinion also shared by our American colleagues, as we observe greater frequency of ethmoidal disease. The continental physicians seem to see a greater number of affections of the frontal sinus and lay more stress upon diseases of the latter. I can not say if this discrepancy is based on actual facts, or if less attention is paid to the frontal sinus here. This latter assumption can not well be accepted, when we consider the zeal and energy shown by our confreres in investigations of accessory sinus diseases. It is perhaps possible, that the greater frequency of ethmoidal affections bears some relations to the greater frequency of intra-nasal diseases on this continent in general, an occurrence which gave rise to the designation "American catarrh."

The opening of the ethmoidal cells is effected by removal of hypertrophies, of polypi of the middle turbinated, by ablution of its anterior part and by thorough curetting of the ethmoidal cells. Curettment has in many cases to be repeated, but not before the reaction, from the first interference has passed off and its result has been ascertained. I may here incidentally mention, that there are colleagues, who, thoroughly familiar with the locality, open the cavity with trephines, only guided by their tactic sense. The further treatment requires frequent irrigations, insufflation of powders, caustics, as chromic acid, trichloracetic acid. I also have seen good results from applications of strong solutions of nitrat of silver, and have by these different means cured several obstinate cases within one or two months.

If we have succeeded in introducing a sound into the frontal sinus—if necessary after the removal of part of middle turbinated—and if pus appears along the course of the probe, no doubt can exist about the disease of the sinus. We will then attempt a cure by irrigation, injections of astringents, also by dry treatment. But as the intra-nasal treatment of the frontal sinus does not promise good results as its probing is seldom successful, the external operation is preferable, as only quite recently emphasized

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again by Schech. Of the different methods recommended the least disfiguration is made by a cut through the eyebrows, followed by removal of the wall of the sinus to any desirable extent. Through this opening we can curett the mucous membrane, introduce iodoform gauze and effect a eure within two to three months, often earlier. The exit of the sinus to the nose ought to be explored, if necessary, enlarged.

The opening of the spheroidal sinus is effected in the same manner, as the sound is introduced into the sinus, a manipulation already alluded to. To be successful it will often be necessary to remove parts of the middle turbinated. As the anterior wall of the sinus is in chronic affections generally implicated, becomes fragil, rarefied, its perforation can be accomplished without much force, when we experience the sensation, that the sound has entered a cavity, and that its distal end is more or less movable. I never have experienced in this proceeding as much difficulty, nor do I consider spheroidal disease as dangerous, as some of my colleagues, but generally found a longer time necessary for treatment than in diseases of the other cavities. The general rules laid down in the treatment of the other sinuses are also applicable here.

Gentlemen, I have endeavored to lay before you this complicated subject in a short synopsis, as well as I was able and the short time permitted me. Many interesting points have not been mentioned at all, several have only been alluded to. I did not dwell upon the relationship between ozena and accessory sinus disease, the tumors, the foreign bodies, parasites, the condition of the eye, which is often very important, further, not upon many operative procedures. It is impossible to exhaust a subject in a short paper, about which voluminous books have been written, about whose special parts numerous treatises have appeared. As stated in my initiatory remarks, it was my aim to draw your attention to this class of disease, and my purpose has been accomplished, if I have enabled you, to diagnose and treat these affections more readily, and thereby to be of greater assistance to your patients.

46 East Twenty-fifth St.

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ABSTRACTS FROM CURRENT RHINOLOGIC AND LARYNGOLOGIC LITERATURE.

By Wm. Scheppegrell, A. M., M. D.,
of New Orleans, La.

Chairman Section on Otology, Rhinology and Laryngology, Louisiana State Medical Society; Fellow American Laryngological, Rhinological and Otological Society; Member Societe Francaise d'Otologie, de Laryngologie et de Rhinologie; Vice-President New Orleans Electric Society, etc.

Roentgen's Discovery as Applied to Medicine.

Dr. Henry W. Cattell (*International Medical Mag.*, February, 1896) states that the discovery by Roentgen of Würzburg, of a peculiar form of energy, makes a new era in practical medicine, for we are now able by this process to produce pictures of bones and certain other substances, such as glass, bullets and pins, when covered by the soft tissues of the living body. The process of taking a *skotograph* (okotos, darkness) is as follows: An ordinary photographic plate is introduced into a wooden plate-holder, which is placed upon a firm table. The hand or other object to be skotographed is now rested upon the plate-holder, and a Crookes tube is arranged from 3 to 5 inches above the object, so that the X or cathodic rays fall perpendicularly upon the object. An ordinary Ruhmkorff coil and several cells are sufficient to supply the electrical current, though a higher frequency current is better, as the time of exposure can thus be materially lessened.

Dr. Cattell has seen the first specimens from two post mortems, where an unsuspected jack-stone was lodged in the larynx. As the tissues here are capable of being skotographed by the apparatus already at our command, the laryngologist has a new instrument which he can use for such purpose.

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A Case of Salivary Calculus.

DR. J. G. HARVEY (*Medical Fortnightly*, December, 1895) reports a case of a patient who has had for ten years a tumor under the left jaw, caused by swelling of the submaxillary salivary gland. When the patient "takes cold," the tumor would increase in size and become very painful. The tumor was the size of a walnut, and when incised was found to contain a salivary calculus as large as a navy (?) bean. The tumor became reduced in size after this operation, and at the time the report was made was as large as an almond, and painless.

The Cure of Coryza by the Inhalation of Menthol and Chloroform.

DR. M. WINSCHE (*Therapeutische Monatshefte*, November 9, 1895,) claims that 10 grammes of chloroform holding in solution 5 to 10 milligrammes of menthol, will arrest a coryza in its early stages, and that this remedy is an excellent prophylactic against influenza.

Four to six drops of the solution are poured into the hollow of one hand; then the two palms are rubbed together, and the vapor which is covered is inhaled through the nose and mouth. Sometimes the coryza is arrested after the first inhalation, but it is recommended to repeat this inhalation once or twice during the day.

It will be remembered that it was Dr. Sotis-Cohen, who in 1872, first recommended the use of chloroform in acute coryza.

The Control of Hemorrhage in "Bleeders."

An editorial in *The Therapeutic Gazette* (January, 1896) calls attention to the method of controlling hemorrhages recommended by Wright of England.

This method is the internal use of calcium chlorid on account of its influence upon coagulation of the blood, it having been proven by Wright to increase the coagulation of blood, not only in animals, but also in man. Thus he has stopped bleeding and increased the coagulation of blood in his own case, and has reported several cases of hemophilia in which good results followed the use of it, even although these cases were hereditary hemophitics.

Those who have had any experience with this unfortunate condition will welcome any method which offers promising results in these cases.

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A Case of Cocain Poisoning.

DR. M. LAASER (*Allg. Med. Central-Zeitung*, 1890-1895) reports the case of a patient suffering from chronic purulent otitis media, in which he syringed the ear per tubam; as the patient complained of severe pains, he afterwards applied 5 drops of a 10 per cent solution of cocain to the red and swollen mucous membrane of the middle ear. At the moment of application, the patient swollowed, and some of the solution passed into his throat.

An half hour later, the author was called to the patient, whom he found in a state of collapse, the pupils dilated and maximum, and not reacting to light, labored respiration, inability to swollow and marked stupor. After the injection of camphor and the use of an emetic, the patient recovered, slept three hours and awoke feeling well. As the amount of cocain used was only one-half grain, Dr. Laaser considers this a case of idiosyncrasy, but warns against the application of cocain to the rapidly absorbing mucous membrane of the middle ear.

Congenital Double Fistula of the Lower Lip Simulating a Supernumary Nose.

DR. LEWIS H. MILLER (*Med. Record*, January 18, 1896) after calling attention to the fact that he was able to find only three cases of congenital fistula of the lower lip in the literature of the subject, describes a case occurring in his own practice.

The patient was a young lady, 17 years of age, of German parentage, and aside from the condition in question had a cleft of the soft palate involving two-thirds of the organ with one-half of a uvulva on either side. Otherwise she appeared healthy and well developed. When her mouth was closed, from a habit she had contracted of holding the under lip with the upper incisor teeth, none of the deformity appeared, but as soon as the lip was opened, there was presented in front of the lower incisors what looked like two nostrils, as though a nose by some plastic operation had been placed in the inner side of the lower lip.

These openings extended down into the thickness of the lip over 2 *cm.*, and were lined with mucous membrane.

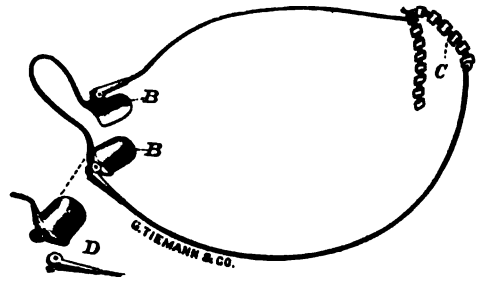
To remove the deformity, the author took out a V-shaped piece from the inner wall of each fistula, dissected out the lining membrane, and stitched down the flaps thus formed.

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Aside from the rareness of this condition, the case reported is remarkable, that it should have been left undisturbed till adult life.

An Adjustable Self-Retaining Nasal Speculum.

DR. SAM'L GOLDSTEIN (*N. Y. Med. Journal*, February, 1896) describes a new self-retaining speculum, for which he claims lightness, cleanliness, economy and general utility. The general idea of the instrument is shown in the illustration. There is a set of three speculæ, of different sizes, each of which can



be fitted to the spectacle frame by means of a French lock. When one is about to operate, the blades of the speculum are placed in the nostril, and the catch of one portion of the frame is caught in a link of the chain at the back of the patient's head, thus making the speculum self-retaining, and both the operator's hands are free for work.

In What Manner Can Ulcerations of the Nasal Septum Following Operations and in Atrophic Rhinitis be Healed to Secure an Even and Moist Surface?

DR. CLARENCE C. RICE (*Medical News*, February 8, 1896) calls attention to the importance of healing nasal ulcerations in such a manner that the cicatricial surface will not accumulate secretions. He advocates the following points:

1. Ulcerations in the nasal septum produced by operative work repair themselves promptly and with an even, moist cicatrix, just in proportion to the degree of general healthfulness of the nasal mucous membrane which exists; much better in hypertrophic than in atrophic conditions.

2. Ulcerations produced by the galvanic-cautery do not heal in so favorable manner as those caused by excision.

3. In healthy nostrils little beyond antiseptic irrigation should be done in the treatment of operative ulcerations until

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they are even with the surrounding tissues; then the surface should be (by means of cotton and applicator) *rubbed forcibly* with an appropriate antiseptic stimulant, such as borolyptol or listerin, until the surface of the cicatrix is smooth and moist.

4. This same frictional treatment should be used to heal the mutiple small ulcerations to atrophic rhinitis, and to level and make moist the cartilagenous surface, and so prevent the accumulation of dried secretions.

5. Extreme irritability of the nasal passages, as evinced by paroxysm of sneezing, frequent spasmodic closure of one or both nostrils, abundant transudation of watery fluid, etc., can often be relieved by rubbing the septum and anterior turbinated in the same manner.

A Case of Epithelial Cancer of the Nose of Three Years Standing—Its Treatment and Cure.

DR. CHARLES R. WEED (*Medical News*, January 25, 1896) reports a case of epithelioma of the right nasal ala, the growth involving the cheek to within one-quarter of an inch of the internal canthus of the right eye, cured by the application of trichloriacetic acid. The patient was also directed to keep the surface moist with a 2 per cent solution of zinc chlorid. The author believes trichloracetic acid to be the best local caustic, and that the cure was due to this agent.

The Treatment of Sinusitis.

The subject of general discussion at the meeting (May, 1895) of the Vienna Laryngological Society was the treatment of the affections of the accessory sinuses of the nose (*Journal of Laryngology*, January, 1895), Stork, Chiari, Weil, Grossmann and Hajek taking part in the discussion. The general tendency of the discussion was decidedly conservative, Stork going so far as to say that, in view of the unsatisfactory results so far obtained, we ought to operate only when this seems indispensable for the relief of great suffering. Weil also limits his operations to strict necessity, and cures many of his cases of sinusitis by simple pulverizations through the natural openings. He believes that the majority of sinus suppurations are cured spontaneously when a regular outlet for the pus is assured through natural or artificial openings, and pronounces himself against the opinion generally held latterly of radical operation,

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and against the early use of the curette, exposing the patient to danger before having made a satisfactory attempt at treatment by simple means.

Chiari has entered the antrum through the canine fossa only three times, operating in his other cases through the alveolus. He irrigates and introduces iodoform gauze strips. The operation through the canine fossa was always followed by great swelling of the cheek, and irrigation and tampooning have been much more painful than through the alveola fistula.

Hajek warns against too great conservatism in the surgery of the accessory sinuses. Even if many of the cases cannot be cured, it is better to make an opening in the maxilla to facilitate the issue of pus than to leave the pus stagnant in the sinus to decompose and produce various accidents.

On the other hand, if the opening through the alveola apophysis is not successful, that through the canine fossa, according to published cases, does not give encouraging results. He has never practiced, in cases of chronic suppuration of the frontal sinus, external trepanation of the sinus, as he does not consider it indicated in cases of this kind. Stenosis of the middle meatus is generally the principle cause of the persistence of suppuration and of the intermittent headache and the treatment should be directed to this locality.

Orbital Cellulitis Produced by a Gunshot Wound of the Frontal Sinus.

DR. H. D. SCHWARSCHILD (*American Medico-Surgical Bulletin*, January 18, 1896) reports a case of a man who, while fishing, felt a stinging sensation in the brow, but was not aware that he had been shot, although a drop of blood appeared upon the spot where he had felt the pain. A severe reaction followed with much cellulitis of the tissues over the eye. To relieve the pressure which endangered the eye a deep incision was made almost the entire length of the lid, and the following day pus made its appearance from the nasal portion of the incision.

A week later, as the general condition improved, and the swelling and chemosis considerably reduced, the traumatic opening into the frontal sinus was enlarged with a mastoid gauze; the cavity being explored a large size bird-shot was found. The subsequent cure was uneventful.

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A Safe and Sure Method of Reducing Enlarged Tonsils.

DR. H. H. KENDALL (*The Journal of the Medical Association*, January 4, 1896) believes that in every case of acute or chronic inflammation of the tonsils the salivary secretion will be found acid instead of alkalin, and that free doses of potassium or soda internally and locally applied will give most rapid relief.

An efficient cauterant and at the same time an antiseptic and alterant is pure hydrochloric acid, which Dr. Kendall uses for these cases, by a special method. He uses a capillary glass tube (Bohemian or Whital and Tatum's glass), one-eighth of an inch caliber, heated in a Bunson flame and drawn to a point, the shaft of the drawn part two inches long, and taken off and fire-polished. When the point of this tube touches any substance it will deposit the fraction of a drop; by long contact it will deposit all that it contained.

He dips these tubes into pure fuming hydrocloric acid, and pushes them into the excretory ducts of the tonsils, three in each gland and at each sitting, twice a week. This operation is painless and producing no inflammation or swelling. Five or six applications are sufficient for moderately enlarged tonsils. Nitric acid used in the same way will produce swelling and sloughing. Chronic acid he has abandoned after producing tetamus in a malignant case.

A Case of Fatal Pharyngeal Hemorrhage.

DR. G. E. BREWER reported before the section on Laryngology and Rhinology of the N. Y. Academy of Medicine, a case of fatal pharyngeal hemorrhage (*American Medico-Surgical Bulletin*, January 18, 1896). The patient was a well-developed, vigorous young man, who recently developed symptoms of an ordinary sore throat. An inspection showed some redness and swelling in the region of the left tonsil, and the case was regarded as a mild quinsy. A day or two later, spontaneous rupture occurred followed by a small amount of hemorrhage, and the symptoms subsided. The hemorrhage, however, recurred from time to time. A few days later a severe hemorrhage took place which resulted in syncope. It ceased spontaneously. An inspection of the throat showed that the left tonsil was slightly more swollen than the opposite side, and a small clot of blood was observed adherent to the posterior pillar.

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The next morning the nasal cavities were examined and found apparently normal. On the posterior surface of the soft palate was a small granulating surface covered by a firm clot of blood. Every other source of hemorrhage was excluded.

Two hours after the examination, without apparent exciting cause and while the patient was resting quietly in bed, a second hemorrhage occurred, and thirty-six hours later another, both of which were controlled by the peroxid of hydrogen. A pad was now devised by means of which firm pressure was made over the bleeding point. Six hours later, the patient had a fit of coughing, which was followed by a fatal hemorrhage. It is to be regretted that a post mortem examination was not made.

Sudden Death on Opening a Retro-pharyngeal Abscess.

DRS. LEVREY and GHIKA (*Revue de Med. et de th. inf.*, November, 1895) report a case of a child of six months which suffered from its throat and had difficulty in swallowing for six days. The child was pale, breathed heavily and kept its mouth continually open. The right side of the throat was red and projecting forward, and, by palpitation there could be felt, to the right of the median line, at the level of the arytenoid cartilages, a swelling which fluctuated.

An incision was made in the median line, and a quantity of pus escaped from the nose and mouth of the child whose head had been inclined forward. The child, however, had ceased to breathe and the eyes became fixed.

At the autopsy, no trace of pus could be found in the larynx, trachea or troncheal tubes, and the lungs were in a healthy condition. Death was due to syncope with immediate arrest of respiration.

A Case of Hystero-traumatic Aphonia.

DRS. BIANCHI and MASSEI report a rare case of hysterical aphonia following the extirpation of a tumor from the larynx (*Archiv. ital. d. Laringologie*). A lady 25 years of age applied to Dr. Massei suffering from hoarseness and difficulty of respiration. These symptoms were due to a tumor of the right vocal cord, which neoplasm was removed. Immediately after the operation, the patient became aphonic, which continued for several months. In the meanwhile the tumor developed again to such a degree, that it had again to be removed. The

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aphonia, however, persisted after the second operation, although the site of the tumor cicatrized and the vocal cords assumed their normal appearance.

A diagnosis of hystero-traumatic paralysis of the vocal cords was made, although the patient showed no other symptoms of hysteria. After all the ordinary methods of treatment had been exhausted and the condition had persisted for seven months, it was finally decided to try the effects of hypnosis. The patient was easily hypnotized, and while in this condition, the suggestion was made to her to speak in the future in a loud voice. This treatment was successful, and until the time that the report made (five months) the patient had continued to speak in a loud distinct voice.

Congenital Deformity of the Epiglottis.

MEINHARDT SCHMIDT (*Archiv f. Klin. Chirurgie, Deut. Med. Zeit*) reports a case of a child, 10 months of age, which suffered during its lifetime from continued difficulty in respiration. The autopsy showed that the cause of the dyspnoea was the epiglottis, which was distorted. The epiglottis, which was otherwise normally developed, was so bent laterally that the edges were pressed together in the median line, and almost completely occluded the *Aditus laryngis*. The only openings into the larynx were two small apertures, one at the anterior and the other near the posterior part of the epiglottis.

Intubation in Paralytic Laryngeal Stenosis.

DR. J. O. DWYER (*N. Y. Med. Journal*, December 28, 1895) states that excision of the vocal cords, or any portion of them for paralysis of both abductors, is worse than useless, unless this operation is immediately followed by intubation, because the tissue removed is soon replaced by new tissue, which in time controls, thus converting a simple valvular obstruction to inspiration into a cicatricial one.

To produce a permanent breathing channel through the larynx in incurable paralysis of both abductors, a simple incision through the cord, which destroys the valve, followed by the wearing of a cylindrical intubation tube until the incised cord has healed in the retracting position, is all that is required.

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Before pronouncing a case of double abductive paralysis incurable it would be well to try long continued intubation with a cylindrical tube before resorting to more radical methods, because some of these cases prove curable even after having existed a long time and resisting all the ordinary methods of treatment.

Tubes for the treatment of such cases should be constructed of hard rubber, which are not subject to calcareous deposits, which occur in all forms of metalic tubes.

The ordinary intubation tube suitable for the patient's age, is held in the larynx solely by contraction of the vocal cords, and when this power is lost, by paralysis or otherwise, it must be transferred to the cricoid cartilage by increasing the retaining swell.

Some Avoidable Accidents of Intubation.

Dr. George F. Cott (*Medical and Surgical Reporter*, January 25, 1896) in an experience of forty cases of intubation, has had some uncommon accidents, which has given him valuable experience. He has had the patient to stop breathing and revived him by artificial respiration; has been obliged to do tracheotomy within half an hour after the tube was extracted and the little patient died on the table; has had the tube obstructed one-half hour after its introduction, necessitating its extraction; has had the tube coughed up and death follow before aid could be rendered; has had three tubes coughed up immediately after introduction, so that he was forced to perform tracheotomy; has lost tubes during an effort at extraction, and "lost the patients too."

He then reports a case of the last-mentioned accident. A child 13 months of age, almost moribund with diphtheria, was intubated. Five days later the child appeared sufficiently improved, extraction was attempted. The extractor, however, slipped and the tube disappeared and could not be found. Three times preparations were made to tracheotomize the patient to find the tube, but as no symptoms developed, it was deferred. Four weeks later, the autopsy revealed this tube in the bronchus, through whose left branches it had evidently ulcerated.

The author recommends the use of Dr. Lewenthal's extractor, and advises that the thread be not removed unless the operator is expert in extracting the tube.

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The Etiology of Ulcers of the Larynx in Typhoid Fever.

DR. PAUL BERGENGRUEN (*Archiv. f. Laryngologie*) calls attention to the surprising difference in the reports of the published cases of laryngeal complication in typhoid fever. While some writers give a percentage of over 30, others find less than 2 per cent of this complication. Schroetter, who for four years made a careful laryngoscopical examination of every case of typhoid fever in the Rudolf's Hospital in Vienna, found only 3 per cent of the cases suffering from a laryngeal complication.

The writer then gives the clinical history of a case of this complication. A sailor, 24 years of age, with typhoid fever, developed on the tenth day hoarseness and severe nose-bleeding. On the thirteenth day the respiration was impeded, the voice still hoarse and much mucus expectorated. On the fourteenth day the respiration was stenotic and the stridor was marked. A laryngoscopic examination showed swelling of the epiglottis, and the arytenoid cartilages covered with tenacious mucus. A low tracheotomy was performed, but the respiration still remained stridulous and two hours afterwards the patient died, the face being strongly cyanosed.

The autopsy showed the mucous membrane of the larynx in the region of the arytenoid cartilages markedly oedematus; both vocal cords were almost entirely destroyed by well-defined deep ulcers; the ulcerated region covered by a gray, pulpy malodorous mass.

From a careful study of the case, he concludes that this laryngeal complication is not due to decubitus, but to a secondary infection of the larynx as advocated by Rokitansky.

Bilateral Abductor Paralysis of the Vocal Bands.

DR. C. W. HARTWIG (*Presbyterian Eye, Ear and Throat Charity Hospital Reports*, January, 1896) reports a case of bilateral abductor paralysis, which shows the importance of an early positive diagnosis and prompt surgical interference.

The patient applied to the hospital, suffering from labored respiration and marked inspiratory stridor. The laryngoscope revealed absolute paralysis of the left vocal band in adduction, and the right band moved but slightly, and on inspiration the bands were brought in opposition, which completely closed the glottis.

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Immediate operation was advised, but for some reason it was postponed. Four days later the author was hastily summoned to the ward by the nurse, who stated that the man was dying. An attempt was made to bring him to the operating room, but when the next ward was reached the patient fell over a bed, ceased breathing and became unconscious. Dr. Hartwig ran to the operating room and returned with a scalpel and a pair of scissors, drew the head of the patient over the side of the bed and plunged the knife into the trachea just below the isthmus, and enlarged the opening with the scissors; then, with the scissors and finger separating the opening, he was turned over on his side to prevent the blood trickling into the larynx. Artificial respiration was resorted to, after which the canula was inserted. The patient gradually recovered. He improved under anti-syphilitic treatment, but still wears the canula.

A Case of Papillomata of the Larynx Cured by Application of Absolute Alcohol.

Dr. Delevan reported before the section on Laryngology and Rhinology of the New York Academy of Medicine a case of multiple papillomata of the larynx cured by the application of absolute alcohol (*American Medico-Surgical Bulletin*, January 18, 1896). A spray of alcohol was applied by the patient herself six times daily, and in a very short time improvement was noticeable. The voice improved, the growths shrunk in size and several papillomatus masses came away. This treatment was continued for five months, when no trace of papillomata could be found. The author suggests that this treatment also gives us a method of differentiating between a small papilloma and a malignant growth of the larynx.

Diffuse Papillomatus Hypertrophy of the Laryngeal Mucosa.

Dr. A. A. Kanthack (*Journal of Laryngology*, January, 1896) exhibited before the Laryngological Society of London the larynx of a child that had died suddenly of asphyxia. The aditus laryngis was completely blocked by a dense papillomatous growth which filled up the whole of the larynx. The growth extended not only below the cords as far as the lower border of the cricoid, but even lower down, just below the tracheotomy wound (tracheotomy being done too late to save the child), a

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few small warty growths could be seen. Microscopically, the growths were found to be papillomatus and lined by a thick layer of squamous epithelium.

The Occurrence of Goiter Among the Indians of the United States.

Dr. Edward L. Munson has made a collective study of the occurrence of goiter among the Indians of the United States (New York *Medical Journal*, October 26, 1895). With a view of determining a possible race predisposition to this disease, a series of twenty-five questions, bearing on this affection in all its phases, was sent to the Indian Service physicians at each of the sixty-three agencies, and full reports were received in all but three instances.

The conclusions which Dr. Munson has reached from a study of these reports are as follows:

There is a strong racial predisposition to goiter among the Indians.

Goiter is distinctly a localized disease.

Goiter does not appear to be caused by high altitudes, climate or water containing an excess of calcarious salts.

This disease appears to be favored by unsanitary surroundings, depressing constitutional conditions, and an excessively nitrogenous diet.

Hereditary influence is a prominent factor in the causation of this disease.

Sex and puberty exert a strong influence in its production, and there appears to be an intimate relationship in women between the thyroid gland and the reproductive organs.

Cretenism is extremely rare in connection with this disease and exophthalmic goiter moderately so.

The tumor is correspondingly smaller than among the whites, and localities apparently affect the growth as well as its frequency.

The usual treatment is unsatisfactory.

A Chemical and Experimental Research in "Antiphthisin" (Kleb's).

Drs. E. L. Trudeau and E. R. Baldwin (*Medical Record*, December, 1895) call attention to a communication made in

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1892 by Kleb, in which he claims, by chemical methods which he describes, to have separated from tuberculin, and later from the filtrate of over-ripe liquid cultures, a product, which, owing to its specific germiadal action, is capable of killing the tubercle bacillus, even when entrenched in the living tissues of infected men and animals, and thus curing the disease.

According to Kleb's observations the cure is brought about, not as Koch thought, by the power of the specific product to incite a reactionary effect in the part of the body cells, but directly and solely through its germicidal effort in the tubercle bacillus.

After a minute detail of the chemical and experimental research which the authors made of "antiphthisin" they formulated the following conclusions:

1. The substance made according to Kleb's published method, and called by him "antiphthisin," resembles deutero-albumoses in its chemical reactions and can be precipitated by sodium-bismuth-iodid. Hence it has no peculiarity of behavior to that reagent to distinguish it, and as similar substances can be obtained from unplanted bouillon, it cannot be considered an altogether specific product of the tubercle bacillus.

"Antiphthisin," prepared according to Kleb's published method, is practically highly diluted tuberculin, and its physiological effect on animals in sufficient doses is the same as tuberculin.

2. "Antipthisin" possesses, under the conditions stated above in germicidal power in the tubercle bacillus which can be demonstrated *in vitreo*.

3. When applied to animals, as stated above, neither "tuberculocidin" nor "antiphthisin" had any curative influence over the course of experimental tuberculosis in the guinea pig.

4. Since cultures of the tubercule bacillus become acid as they grow, and, furthermore, since the addition without heat of a little alkali to the filtered culture medium upon which the bacilli have ceased to grow, renders it again fit for the development of a second crop of germs so long as any nutriment remains, it may be inferred that the limitation of the growth of the tubercle bacillus in such a culture is most likely due to the acidity induced in the medium, rather than to any specific germiadal substance produced therein.

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A Case of Malignant Interbronchial Growth.

DR. J. G. ADAMS (Montreal *Medical Journal*, January, 1896) reports a case of malignant interbronchial growth, associated with a misleading train of symptoms. The patient, a woman 50 years of age, was seen one year before death, and presented the physical signs of tuberculosis of the right apex. Six months afterwards the patient again applied to the hospital, when it was found that the conditions had become aggravated, and a provisional diagnosis was made of pulmonary phthisis, with cavitation of the right apex and hæmoptysis, and with general tuberculosis of the right lung. The sputum appears not to have been examined, as no reference is made to this.

At the autopsy the diagnosis was found to be erroneous. Upon dissecting the main bronchus there was found at the point of division with the right bronchi for the three lobes of the right lung a dirty gray rounded mass with ulcerous extremities, almost completely filling the lumen. Upon further dissection a large, soft, flesh-colored tumor was seen lying in a sac made up of the dilated bronchus of the collapsed lower lobe.

The tumor was 7.5 *cm.* long by 5.3 *cm.* across, and microscopically was found to be a sarcoma of the bronchial wall.

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THE TREATMENT OF HYPERTROPHIC RHINITIS BY THE BIPOLAR METHOD OF ELECTROLYSIS.

By W. Scheppegrell, A. M., M. D.,
of New Orleans, La.

Assistant Surgeon of Eye, Ear, Nose and Throat Hospital—
Vice-President of New Orleans Electric Society.

Translated from La Revue Internationale de Rhinologie, Otologie and Laryngologie.

In September, 1892, I published an article in the New Orleans *Medical and Surgical Journal* entitled, "The Treatment of Hypertrophic Rhinitis by Electrolysis." This new method of treating this disease caused considerable comment at the time, and I received inquiries as to the details of its application from various parts of Europe and America.

Up to the time of the publication of this article I had made use only of the uni-polar method of applying electrolysis in this disease, and, while a longer experience has convinced me of the advantages of using electrolysis, it has also more clearly shown me some of the disadvantages of the mono-polar method.

In hypertrophic rhinitis the object of the treatment is the reduction of the hyperplasia, so as to restore the normal respiratory passage through the nostrils. Cocain, by contracting the blood vessels, causes a temporary collapse of the tissues; but, unfortunately, this effect continues but a short time, being followed by a marked dilation of the blood vessels, so that the continued use of this medicament soon aggravates the condition for which it was first used. There are probably few rhinologists who now use cocain for this condition, but I have the

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record of a number of cases in which the patients, by advice of their physicians, used cocain for hypertrophic and congested conditions of the mucous membrane of the nose, resulting in marked aggravation of the existing nasal disease.

Among the agents now used for the reduction of hypertrophic rhinitis are the electro-cautery, chromic acid and trichloracetic acid. Of these the electro-cautery is, without doubt, the most practicable and efficient. One of the objections to chromic acid, which I have not seen referred to, and which I have frequently observed in my practice is, that it gives rise to considerable pain. If the parts are well anesthetized with cocain there is, of course, no pain in the application of the caustic, but after the effects of the cocain have passed off, those of my patients on whom I had used chromic acid have very frequently complained of pain, more or less severe, lasting from one to several hours, sometimes involving the whole side of the face and eye. This was, undoubtedly, due to the chromic acid, although an alkalin solution had been used afterwards to neutralize the acid. With the electro-cautery or electrolysis any after pain is rarely complained of.

One objection, however, which applies alike to the electro-cautery, chromic and trichloracetic acids, is the formation of a cicatrix. In other parts of the body less important in their physiological functions the surgeon used every device to avoid the formation of a scar, while the rhinologist boldly inflicts one in the nose of every patient who is suffering from a hypertropic or even only a congested condition of the mucous membrane of the nose. In fact, I have seen the cautery applied so recklessly in some of these cases that but little of the normal mucous membrane could be seen in the nostril. In a dilated condition of the mucous membrane of the nose we attempt to remedy the condition by establishing a cicatrix, which we know by experience in other parts of the body is more yielding than the normal mucous membrane. No doubt this is an important element in the frequent relapses of *rhinitis hypertrophica* and *intumescens*.

In using electrolysis, the object is to reduce the hypertroplasia and break up the net work of dilated blood vessels as with the electro-cautery, but to effect this by means of a submucous operation. Theoretically this is, of course, the ideal operation in all cases, although practically there are some cases

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in which we have to resort to other methods. From an experience of over four years with electrolysis, I can affirm that in those cases in which it can be carried out, especially by the bi-polar method, the results are more satisfactory and more lasting than with any other procedure which I have used. In recommending, therefore, this measure in rhinology, I shall endeavor to point out the conditions and cases in which I have found it most effective.

As regards the modus operandi I will first refer to what I have used in the mono-polar method and then point out the changes required for using the bi-polar method.

For electrolysis the galvanic current is required, the faradic (induced) not possessing the required electro-chemical properties. A current of thirty-five volts will answer the requirements, which may be obtained either from a chemical battery, as for instance twenty-four cells of a Law battery or other sal-ammoniac battery, or from the wires of an incandescent lamp circuit, using the Edison current of not more than 120 volts. The alternating current should never be used, not only on account of the danger to which the patient would be exposed, but because like the faradic, it does not possess the required electrolytic properties.

If a chemical battery be used a selector will be found the most efficient, while with the Edison incandescent lamp current a resistance as a water or carbon rheostat should be used.

In applying electrolysis a milliampere-meter should be used, so that the strength of the current may be noted.

In using the mono-polar method the platinum needle was passed into the hypertrophied tissues, while a dispersing electrode was applied to the back of the neck or to the chest. While the results of the mono-polar method were, in the main, good, a longer experience with its use taught me that it was open to the following objections:

1. There is frequently experienced a burning sensation at the dispersing electrode, which, to many patients, is very unpleasant. This objection could be overcome by the use of larger dispersing electrodes.

2. As the current must traverse a considerable portion of the face and head in passing from the needle to the dispersing electrode, there are frequently felt disagreeable sensations along these points.

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3. On account of the great resistance which the distance between the active and the dispersing electrodes forms to the current, there is a great waste of electro-motive force, and the current has to be applied a considerable length of time to effect the electrolization of the tissues around the platinum needle.

With a view of obviating these objections in a method of treatment which had given me some excellent results, I commenced about two years ago to apply electrolysis by the bi-polar method—that is, by using two needles in the hypertrophied tissues, the one being connected with the positive and the other with the negative pole of the battery. The passage of a current of electricity through these needles causes the electrolization, or chemical decomposition, of the tissues between them, hydrogen being eliminated at the negative needle and oxygen at the positive. As nascent oxygen combines rapidly with most metals, platinum must be used for the positive side, but for greater convenience and to avoid testing the current each time that it is applied, I make use of platinum needles for both the positive and the negative sides.

On account of the proximity of the needles to each other there is a great reduction in the resistance to the current of electricity as compared to the mono-polar method, so that a current of less strength will effect the same work, or the same current that was used in the mono-polar method will act much more effectively. Not only is this the case, but as both needles are imbedded in the tissues between them, so that the operation may be effected much more rapidly. While with the mono-polar method, a case required 15 to 30 minutes, I can now by the bi-polar method, do the same operation more effectively in from 2 to 5 minutes. Another advantage is that, as the current traverses only the tissues between the two needles, which parts can be thoroughly cocainized, the operation can be effected without pain.

In applying the bi-polar method of electrolysis, I would call your attention to a few points to be observed. The nostril should first be *rapidly* cocainized, anticipating, as far as possible the collapse of the tissues which renders it more difficult to insert the needles. The platinum needles should be fine and well pointed, and the greatest care be exercised that the uninsulated parts of the needles do not come in contact within the tissues or elsewhere.

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The needle and holder which I use consist simply of a light but sufficiently strong piece of copper wire, to one end of which the platinum needle is soldered, and to the other end of which is attached a small binding post. The copper wire is covered with a thin piece of rubber tubing, which may be taken off for the proper disinfection of the instrument. The part of the platinum needle near the holder is insulated by means of a little shellac varnish. The insulated cords attached to the binding posts should be as light as possible, as a very thin cable is sufficient to carry the current for this purpose, and is more convenient to handle.

The nostrils being thoroughly illuminated by the reflected light from the forehead mirror, and the alæ well dilated by the nasal speculum, the first needle is passed into the upper part of the hypertrophy, and the second needle into the lower part. A current of sufficient strength is then gradually admitted by means of the rheostat. I have found that while a current of five milliamperes was painful when used by the mono-polar method, twenty milliamperes could easily be borne in the bi-polar method. From 2 to 5 minutes is usually all the time that is required to effect the required electrolization of the tissues.

An experience of over one hundred cases with the bi-polar method of electrolization, enables me to deduce the following points:

A. As compared to the bi-polar method.

1. It is more rapid in its application.
2. Less painful to the patient.
3. More definite in its action.

B. As compared to other methods.

1. It is a more conservative operation as it effects the destruction of the tissues without destroying the mucous membrane and its glandular elements.
2. It is not more painful to the patient and but little more difficult to the skilled operator. It has not the disagreeable after pain following the application of chromic acid.
3. Being a submucous operation, the reaction following it is very slight, as the electrolized tissues are frequently absorbed instead of sloughing off as in other methods.
4. The probabilities of a relapse are much less than in other cases. I have never yet seen a synechia formed in the nostril due to the effects of electrolization.

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Besides the direct effect due to the electrolization of the tissues, there is evidently some other beneficial influence in this mode of applying electricity, which is not yet well understood. The electric force passing between two points does not extend across this distance only in a straight line but also in curves which extend in every direction between the two poles. The greater portion of the electro-motive force passes in a more direct line causing the electro-chemical destruction of the intervening tissues, but the outside curves of electro-motive force, of moderate intensity, exercise some tonic effect on the surrounding tissues, blood-vessels and nerves, to which some of the good effects of this operation must be attributed.

The cases in which the electrolytic method is not practicable may be summed up as follows:

A. As the operation is not performed as rapidly as by means of the galvano-cautery, it is not so practicable in cases of young children or very nervous patients.

B. The physical conformation of some nostrils render it difficult to properly insert the electrolytic needles, and in these cases some other method must be adopted.

In submitting this communication before the Societe Francaise d'Otologie, de Laryngologie et de Rhinologie, a society which numbers among its members many of the most celebrated aurists and laryngologists, I would request my honored confreres to test the bi-polar method of electrolization in some of their cases of hypertrophic rhinitis, trusting that the light of further experience and observation will give this method its proper place as a surgical procedure in rhinology.

New Orleans, March 22, 1895.

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THE FADS AND FASHIONS OF SURGERY.*

By S. O. Richey, M. D.,
of Washington, D. C.

As late as the middle of the eighteenth century, the regimental surgeon in the Prussian army shaved, as part of his duty, the officers of his regiment. To-day, if that were the only way in which an officer could be shaved, it would be a military fashion to wear long beards. Though knowledge has lifted the surgeon among our cousins across the water above his early associations, the company of barbers, to approximate rank with the physician, he is not even now distinguished with an academic degree. In America no entangling alliances of this kind have existed, to be shaken off, for the requirement of a new and sparsely settled country that the practice of medicine and surgery be united in one individual has identified surgery with medicine, and has included both in an academic degree, the least of its advantages; the requisite qualification being the greatest—wisdom in counseling an operation and the ability to do it. This brings us to a question of large dimensions, which I shall not attempt to answer. For the ultimate welfare of the client are these functions better exercised by *two* individuals, or are they better united in one person?

The latitude of this paper denying an exhaustive treatment of such a question, your attention is asked to the consideration of one which arises in a development of our environment, and which may be changed only by slowly changing conditions. The American surgeon has contributed not less than his just part to the growth in the knowledge and technique of our science, but are we not in need of the conservative mind to save to us the respect we possess?

*Read in the Medical Society of the District of Columbia, February 12, 1896.

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Knowledge *and* experience in the same person commonly result in a conservative mind. What has been called "the intuition of experience" is a valuable possession. Enthusiasm and enterprise are also admirable qualities, and when combined with ambition and energy, are essential to the work and progress of the world, but they are best without an element of rashness, which is incompatible with *scientific methods*. That mind is not fitted for our own profession which is without a sense of personal responsibility, and which is not qualified to put in practice those measures which are best for the constitutions entrusted almost absolutely to its care; not what is best for the interruption of the immediate discomfort and its symptoms, but what will have the most beneficial, and the least deleterious, influence upon both the present and the future of the life. *Moral* responsibility does not cease with the discontinuance of medical (or surgical) attendance for the present affection, but involves the remote influence of what is done and what is omitted. This sense may often embarrass its possessor, but it wins confidence and promotes obedience to the "golden rule."

We are a restless and impatient people, and our rapid growth is both dependent upon and a cause of our restlessness. A science must be actually of slow growth; ours above all others demands patient plodding and perseverance. Its field, during the twenty and more centuries through which the art of healing has been practiced, has been worked over again and again. Some minds do not realize that "there is no high road to fame," and with a desire for notoriety, fostered from the cradle in this era, any device with which a name may be connected, from a modified obstetric forceps to a pseudo anti-toxin for tuberculosis, is seized upon and exploited for its gratification. This fact is illustrated by the catalogues of instrument makers and of manufacturing apothecaries, in which instruments and formulæ are so distinguished, and by the indorsements of certain waters and proprietary combinations.

To this class of performances belong also a number of *nagging* operations, some possessing the possibility of benefit; some, not only irritating and irrational, but positively harmful through the trepidation they cause, if in no other way. The intention of devising an operation is not at all questioned, but the persistence in its practice after observation and experience have shown it to be of doubtful value, and by those less wise than the

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originator. A minor mischief arising from such proceeding is the reproach which it brings, not only upon the surgeon who practices it, but upon surgery as a science. Does any man hold that the surgery of America commands more esteem for the recent and widespread *fashion* of castrating women for any and every kind of reason? Was that conservative surgery? What did it save?

When such a proceeding is the fashion it requires the support of his knowledge that he is doing right to enable one to resist the temptation to do as his fellows do, and thus avoid criticism. In a chronic affection the sufferer's patience grows threadbare, and he becomes irksome to his adviser, who, in the *hope* of speedy relief to his client, and in the *fear* that another may operate, and with success, if he does not, allows himself to follow a fashion against his better judgment—*to do what he would not have done to one of his own.* Intelligent laymen are not long in learning to sneer, as we have heard them do at the operation of circumcision, that for appendicitis, at ocular tenotomy, tonsillotomy, "clearing out the nose," excision of the drumhead, etc., as we never hear them do at operation for ovarian tumor, for hernia, at trephination, or extraction of cataract. They jeer at an operation because fashion has belittled it, and *they* make our clientage.

This paper will not discuss the operations in any field save that to which the writer has given special study, and which he deems of first importance, because it is the area of four of the five special senses.

There are exceptions of emergency to what follows, as *any* operation may have its use. Objection is raised to the routine practices of the day.

Many reasons exist for operation, among which we *must* conclude that the *welfare of the patient* stands first, as few individuals receive such a suggestion without aversion, no matter how slight the operation may be, and submit only when convinced that relief can be secured in that, and in no other way. Next, the element of expectation, which is nearly removed from the mind of the surgeon by asepsis and antisepsis; ambition to be known as an operator; the impression that it is best because others do it; the question of compensation is excluded by the fact that more operations are done in charity than otherwise. In 1890, at New London, a prominent specialist said to me with

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a smile: "——'s operation is a good one; he has just received $1,300 for it."

Surgery has never been so conservative as it is to-day, and never has it shown so little conservatism as in the past fifteen years, during which knowledge, care, cleanliness, antisepsis and anesthesia (local and general) have reduced to an inconsiderable percentage the danger to life. Probably, on account of the reduced pain and risk, the disposition to operate in the region of the trigeminus, where the proceedings are with some exceptions comparatively bloodless, has grown reckless, and that upon tissues exquisitely adapted to special function which even a cicatrix may mar. That there is more snipping in this region than meets with general approval is shown by a rising wave of protest which is appearing in the literature and society discussions;[1] let us hope it will not develop into *reaction*. There is a golden mean which *fashion* never observes.

To condemn a measure, until its devisers and advocates have had a fair hearing, or until its effect, as compared with other means, has been shown by experience, is unwise. But usually there is "the other side," which should be heard *sometime*, especially in face of a growing reluctance to such constant cutting.

Tonsillotomy. The importance of an enlarged faucial tonsil is very much exaggerated. Occurring as a chronic process, while in intercurrent attacks of croup, bronchitis, or one of the exanthemata, it may prove serious, yet excision, save in emergency, is of questionable wisdom, as it can be reduced by proper management,[2] and time is afforded for this by the chronicity of the condition. This is accomplished by treating the disease-process instead of merely removing the redundant tissue and leaving the disease to reproduce it. In adolescents the re-

[1] This paper was written a year ago; no time was assigned for its reading.

The discussions at the meeting of the American Medical Association in Baltimore last May demonstrate the rapid growth of dissent.

[2] Dr. H. W. Kendall, Quincy, Ill., (*Journal American Medical Association*, January, 1896,) A Safe and Sure Method of Reducing Enlarged Tonsils, recommends the use of pure hydrochloric acid, a drop being introduced into the secretory ducts (into each of the three) by means of a capillary glass tube, twice a week. He claims it to be painless and that half a dozen applications will reduce a moderately enlarged gland, and thinks "tonsils ought never to be removed with knife or scissors."

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currence of the enlargement is seen, after excision; the organ so large sometimes as to extend to the median line, always above and below its normal limits, in which directions the ordinary form of ablation does not diminish the growth. But for the change of shape, the loss of the rounded surface, and the exposure of the lacuna, it would not be easy to realize that the tonsil had ever been reduced.

The effect of an excision may be attributed to three causes: The loss of tissue, the local depletion, and the subsequent cicatricial contraction; all of which is overcome by the persisting hyper-nutritive process, unless the period at which atrophy begins is reached too soon. As a deduction from the observation that tonsillar hypertrophy more commonly occurs in children fed by hand, the cause is probably constitutional; abnormal digestive or metabolic processes, and the removal of proliferated tissue will not cure these.

Applications to the external surface of the gland serve no purpose whatever, but by the use of proper agents in the crypts, injected gently, or passed through the orifices on a cotton-holder, the organ will gradually shrink, until the age of atrophy, which possibility should not be overlooked. Silver nitrat, to promote constructive metamorphosis; kali permanganat, to excite active oxidation; salicylic acid, to neutralize morbid and irritating deposits; each used in proper form and strength is antiseptic, and two of them are astringent. Tonsillotomy in emergency is necessary. As a routine practice, as in the case of those who have excised "their peck of tonsils," it is needless mutilation. The true reason for such practice is that the surgeon finds it a quick and easy way to dispose of an organ which he does not understand; after the manner of Herophilus, some hundreds of years B. C., who hacked at the liver and spleen which he judged "to be useless to the animal economy." God save the mark! Is it not wiser to stand with our hats off in the presence of a mystery we can not solve, than to attack it boldly with a knife? The tonsil has, or has had, some function. Until we know what that is, who can call the mutilation harmless?

Some years ago, a vivacious woman remarked to me that when she went into the office of a colleague, who did this operation whenever circumstances permitted, she "always raised her skirts and tip-toed across the floor for fear of stepping on one

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of the horrid things." It may be impossible to avoid such jeering; if so, it is unfortunate.

Excision and cautery of hypertrophied turbinated bodies occurs more frequently than is justified. The hypertrophy is often the first stage of a process which ends in atrophy, the final action frequently having begun at the time of interference, and before superficial hypertrophy has ceased. Operation must accentuate the final condition. It *may* relieve the immediate discomfort, but it *adds* a cicatrix which collects the secretions, causing increased and never-ending annoyance.

The anatomy and the physiological functions of the nasal cavity, give us rational indications; the free passage of inspired air to be warmed by its vast area of mucous membrane overlaying plexuses of blood-vessels, constituting "corpora cavernosa," and to be supplied with moisture before passing through the deeper respiratory passages. The most pronounced direction of the normal current of inspired air, according to Aschenbrandt,[3] R. Kayser,[4] E. Bloch[5] and E. Paulsen,[6] is through the upper straight. Paulsen made the first experimental investigation, from which he concludes, that in inspiration "the bulk of air takes an upward course, rises to the bridge of the nose, passes along the roof of the nasal cavities until it reaches the posterior portion when it again descends along a curved route." The lower nasal passage is not touched by the current of air, for "the inferior border of this current extends at no point beyond the middle of the lower turbinated body." Kayser's experiment with powdered magnesia shows that "when tried upon a fairly normal nose in the living, rhinoscopy will reveal the following surprising picture: A more or less dense layer of white is seen at the anterior extremity of the septum, and about 1.5 *cm.* from the point of the nose at the level of the middle or upper portion of the inferior turbinated body. Thence, the white powder extends along the septum describing a semi-circle from before backward. The lower passage, the floor, and the lower border of the inferior turbinated body are entirely free from the powder; on the upper surface and the anterior extremity of the inferior turbinated body there

[3] Die Bedeutung der Nase für die Athmung. Wurzburg, 1886.
[4] Pflueger's Arch. f. d. ges. Physiol. Bd. XLI., 1887.
[5] *Archiv. Otol.*, No. 4, Vol. XVII., 1889.
[6] Sitzungsb. der K. Akad. der Wissensch., April 1882.

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are a few grains. The anterior vertical border of the middle turbinated body is thickly covered, also its lower border, and the lateral walls of the middle passage are well covered. Above the middle turbinated body as far as it is possible to observe, there is powder, especially upon the septum. Posterior rhinoscopy shows some powder upon the upper part of the posterior pharyngeal wall; it is only with the production of very dense clouds of dust that, under normal circumstances, the deposit of powder upon the posterior wall of the pharynx extends to the lower part opposite the lower nasal passage. Modifications of this picture depend upon the structure of the interior of the nose."

Bloch, of Freiburg, reached the conclusions that "inspired air, in its passage through the nose, gains in heat five-ninths of the difference between its temperature and that of the body; that the air at an average temperature would pass into the pharyngeal cavity through the nose only two-thirds saturated; that small solid particles inspired are in great part retained by the nose, but the nose is not capable of freeing entirely the inspired air of impurities, even with the aid of the naso-pharyngeal cavity."

The arteries, which supply the lining membrane of the nasal fossæ, the ethmoidal cells, and the frontal sinuses, are branches of the ophthalmic and spheno-palatine arteries. They enter the nasal cavity far back in the upper straight, and it may be seen that engorgement of the blood-vessels, or a slight redundancy of tissue, in this space will greatly embarrass breathing, diminish nasal resonance and contribute to overfulness of the plexuses of the turbinated bodies, both directly and indirectly. The radical arteries and veins pass side by side, through foramina into the nose. When arterial dilatation takes place by direct blood pressure from the vascular centers, or as a reflex engorgement from irritation of the intra-nasal nerve endings, the arteries, by pressure, diminish the caliber of the veins at the foramina, check the reflux of blood, cause venous stasis of the nasal contents, obstruction of the mucous gland openings, with consequent cellular infiltration of the intra-nasal tissues, favoring fibrosis, intra-nasal hypertrophy.

In this extremely delicate space of the upper straight, requiring the most careful manipulation to reach it with instruments, the conservative work of the surgeon must be done. Sprays

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may reach it, but are evanescent in effect, as they are promptly removed by the abundant secretion excited by their presence.[7] A 4 per cent solution of cocain, applied here with gentleness and care, causes contraction of the arterial vessels, thus reducing the *influx* of blood; removes their pressure upon the sinuses, thus permitting *efflux* of blood; the gland openings are freed by this influence, and the tissues are further depleted by its effect in unloading the local blood supply of its water. Active circulation is thus promoted in all the intra-nasal tissues, lessening the tendency to connective tissue hyperplasia and encouraging the resorpation of infiltrated material. The quickly passing effect of cocain calls for reinforcement by an agent capable of a more sustained impression, and my experience has fixed upon silver nitrat solution, 2 to 10 per cent, saturated with boric acid, as the most effective in increasing the effect of cocain, and in preventing reaction. It should be applied by means of the cotton-holder, like the cocain which has preceded it ten minutes, the necessary ease of manipulation being quickly acquired by one familiar with the anatomy of the region; carelessness may make the first and last visit of one's client identical. So applied it gives no more discomfort than a 1 per cent solution, and is greatly more effective. Cocain, thus used, is devoid of danger and has great therapeutic value in the early stage of engorgement, and by repeated use in the chronic stage of an inflammation; but there *is* danger from it in the hands of "those who stalk where angels fear to tread." Its therapeutic future is great, for it is more than an anesthetic, *because of the way in which it causes anesthesia.*

This proceeding goes to the root of the trouble. It relieves the local disease instead of removing the products of the disease; it may be varied by anything the operator deems better for his purpose; it is not final in the sense of excision. It obviates the use of chromic, mono and tri-chloracetic acids, and

[7] This is nature's filter, and a reason for believing that intra-nasal pathological changes are of central origin and only limitedly due to external causes. A noxious agent inspired is engaged by the nasal mucous membrane which immediately becomes turgid to prevent its further progress inward, and is then expelled by a flood of secretion before it can secure lodgment; or, if it secures a hold, it is detached by sneezing. When a solution of continuity of tissue exists, a possible *point d'appui*, the ressentment of its presence is more violent, and its expulsion more prompt. *Any* operation dulls this reflex action.

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galvano-cautery, to all of which there are objections. It renders excision of the hypertrophied turbinated bodies unnecessary unless by pressure upon the septum, or floor of the nose, ulceration is induced. As the middle and lower straights answer chiefly the purpose of drainage, these bodies may usually be neglected, as they grow smaller with the freedom insured to the upper straight, and distressing sequences are avoided. In addition to the objections named must be noted the passage of *cold* air into the middle ear of the side operated, a discomfort which can not be relieved, as the natural protection has been removed. That the operation influences anything but a very temporary ear trouble, which may be helped more simply and less mischievously, is not my experience.

For the foregoing reasons we conclude that it is wiser not to diminish the capacity of the organ and hasten the atrophic process and promote sclerosis by the desiccating influence of inspired air, insufficiently warmed and moistened. If the turbinated bodies were always excised when excessive few individuals would escape, for it has been stated that this condition has been found in the *fœtus in utero*. Nations have come and gone retaining their turbinated bodies, as they probably had no no surgeons to whom their removal was so important.

The hypertrophied pharyngeal tonsil, or so-called adenoids, have their share in the above comments. Their removal by operation will not cure the vice that causes them, but may result in immediate and deplorable ear trouble, and not infrequently in subsequent changes in the pharyngeal space, which becomes abnormally large after the age of puberty, and filled with hard nodules which collect and retain the secretions. These dry and cause constant irritation and sometimes ulceration, and the subject will probably be *somebody's* patient for the rest of his life. He, whose experience has been great enough to have seen such cases, will hesitate to add to their number, for the question of recurrence has not been satisfactorily considered. Hermet (*Bull. et. Mem. de la soc. de Laryngol. L'Otol.*, etc., Nos. 1 and 2, 1895) operated only fourteen cases of a total of 103, because he thinks, in addition to the risks from the anesthetic and hemorrhage, there is danger of the operation causing meningitis. He has observed adenoids for years in which there were no ill effects. He watches his cases carefully, and operates only when complications arise, as otitis media, headaches, or interference with development.

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Excision of the drum-membrane, with the malleus and the incus, is a radical measure, justified by a supurative process whose focus can not be more simply reached. The enthusiasm of its advocates[8] has betrayed them into performing it in cases of sclerotic otitis, to which I have demurred from its inauguration,[9] and some of them ignore the reported cases of unmanageable suppuration resulting from it. Every operation ever devised has been reported successful, at first, in its immediate effect; the failures rarely "come to book," because only an exceptionally well-poised man is willing to record a disaster from an operation, of which others report only successes.

In sclerotic otitis the procedure is irrational, because it contributes nothing to the retardation of the disease whose origin is not local; because it deprives the organ of a protection provided by nature against certain mischievous agencies, and exposes the deeper-seated, more delicate and more vital tissues to the added action of such agencies; because it removes what, in the altered condition of the structures, is only *one* impediment, and not the chief one. A late announcement by Prof. Politzer, of Vienna, of the result of certain investigations he has been making[10] goes further to prove the irritationality of this measure in sclerotic otitis. He found the local explanation of the distressing tinnitus and profound deafness in this affection, in the sixteen cases dissected, to be "a circumscribed disease of the bony labyrinthine capsule," the cause of which could not be determined. "Two of the cases had gout, but whether in any of them syphilis had any causation in the deafness could not be decided." In this connection your attention is asked to some suggestions made in a paper read by your essayist at the Ninth International Medical Congress, here, in 1887, which may be found in its transactions; also to a paper,[11] "A Contribution to the Management of General Atrophy (sclerosis) of the Conducting Apparatus of the Ear," which states: "My reliance has been almost entirely upon vapor of iodin, with good, though not with uniformly satisfactory results."

[8] One of them has informed me within the past year that he has abandoned it.

[9] The primary physiological purpose of the membrana tympani. Trans. Am. Otol. Soc., 1888.

[10] *Archives of Otology*, Vol. XXIII., No. 4.

[11] *Amer. Journ. Med. Sci.*, April, 1887.

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The significance of this statement is interesting in view of the suggestion of Prof. Politzer, "considering the benefit often observed from the internal use of iodid of potassium, or iodin, in various diseases of the bones, I would urge * * * that we should resort to the energetic exhibition of one or the other of these remedies internally." The disease is a hyperostosis, and the alteration occurs in the region of the oval window, involving the foot-plate of the stapes, and explains the difficulty and failure of stapedectomy, devised by Dr. Blake, of Boston, for the relief of such cases, and which excited so much hope among us. It *should* finally dispose of the operation of excision of the drumhead and ossicles in sclerosis, or "dry catarrh," for we should bring to bear upon our own work the *common* sense that rules in other relations of life.

In our eagerness to benefit our fellows we have not neglected "the mirrors of the soul."

The proposition to extract the crystalline lens in myopia of high degrees does not seem to have appealed to our spirit of enterprise. Why?

The extraction of an opaque lens in a case of monocular cataract has its advocates, but it gives no advantage, as an aphakic eye in no way balances an eye still retaining its lens. It is justifiable when urged by the patient upon the ground of cosmetics.

Lens opacities pursue such an erratic course that *artificial ripening* should be resorted to with hesitation and care, and in selected cases. Initial cataract may always be initial cataract; the opacity may increase for a time, and then remain at some point of development short of maturity, with useful vision; one may go to maturity and the other, in the same individual, may clear up entirely; all of these conclusions I have seen. That local, or general treatment will lead to a comfortable termination of lens opacity, once begun, can not be determined in view of what its course might have been, but proper diet, regular habits, hot baths, and the regulation of the body functions, have seemed to me to at least retard their development. At the period of life at which such opacities usually occur, this is important; for every shock contributes to the shortening of life, especially in old people, and delay in the development of the opacities may retain useful vision until death, and thus obviate such shock. Many such cases have reached this termi-

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nation under my observation, due, as I believe, to my management, for some of them have gotten greatly improved vision. That this always persists is not claimed, but it has done so in a number of cases which have remained under my observation, notably a man of 68 years of age, who had lost his ability to read from symmetrical striated opacities of the lower half of both lenses. His vision was improved to ability to read in less than a year's time, his distress on account of failing vision was relieved, the cause of his trouble was never explained to him, and he read comfortably to the day of his death, six years later. There was no evidence of choroidal or retinal trouble. Serous apoplexy caused his death.

Many of you remember Dr. Flodoardo Howard (of whose case I unfortunately have no notes, and speak from memory). In the summer of 1880, I sat by him on a train leaving the city, and he confided to me that he would soon have to discontinue practice because of double cataract. He had been advised by a colleague that he must wait for maturity and operation, and in his distress he asked me if something could not be done to enable him to continue his work; for while he could write a prescription, he could not read it afterwards, and was growing worse. I told him I did not know his condition, whereupon he said he would like me to examine his eyes. After examination at my office I told him not to sit idle, but to try other means, and he might avoid operation. In about a year, I saw him reading placidly the *Evening Star* on a moving train, and I am under the impression that he always retained useful vision without operation. There were fundus changes.

I have not seen since June, 1894, a woman of 76 years of age, who was under my care the previous winter, at which time she was not able to read or sew, and wandered about the house in an objectless way. She could recognize no one by sight. Her daughter wrote me from Colorado, some weeks ago, that her books are still giving her pleasure, as they had done for more than a year. I found no evidence of fundus changes in this case; striated opacities of both lenses, confined to no segment. $V = \frac{20}{200}$. What are the probabilities of life at 76?

Another woman, 60 years of age, whom I first saw in December, 1893. $V = \frac{1}{8}$, each. By March, 1894, it had improved to $\frac{1}{3}$, with each eye. She went abroad to spend the summer in traveling. In November her vision was less than $\frac{1}{4}$. Now

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V. R. $= \frac{2}{4}$, and V. L. $= + \frac{2}{3}$. Diffuse striated opacity of both. No choroidal changes to be seen. In the left eye the striæ are fewer and shorter than in the beginning; in the right eye the opacity is less dense. The progress of the opacities has been at least retarded for two years of keen pleasure.

This may only have happened, and have been due to no influence that I exerted, and I will not multiply cases. The affection is often one of senility, and what retards one will influence the other. Such results seem to me better than to wait, with hands folded, for maturity, or than an artificial ripening, although it may deny glory to the knife and diminish risk to the patient. In my experience, local treatment has not been profitable.

Graduated Tenotomy. "A sparrow can not fall to the ground," etc. No individual can be so small, no act can be so correct (humanly speaking), and no principle can be so great, that it will have no sins to answer for. Homeopathy may be the greatest blessing mankind has known, and yet it has been vicious in showing how much *parade* may be made in doing what leaves the observer in doubt if *anything* has been done; so little that "if it does no good, it may do no harm." An operation introduced about ten years ago would seem to be a direct descendant of homeopathy, as it has the ear marks; everybody must *believe* in it; everybody must do it; it must be done often—that homeopathy of operations, graduated tenotomy of the extrinsic muscles.

Although in some instances, doubtless great comfort has followed this operation, none other ever adopted has probably caused so much irritation and anxiety, has done as much mischief as possible good; has put the client to so much unnecessary expense, has fostered such fine-drawn, unavailing conclusions, or has excited so much contemptuous amusement among our professional brethren. It has its earnest advocates among those competent to judge, and therefore has its merits. It should be a last resource, and the surgeon should know when *not* to do it.

While, by some a disturbance equal to two degrees is considered physiological, in the opinion of others a variation of half a degree justifies *snipping;* and the literature of the past eight years is filled with every kind of experience, elaboration and devisement in this connection. A perfect muscular balance has

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been secured by operation without relief, a half degree of heterophoria has remained with distress. Both conditions exist with comfort; even two degrees of muscular unbalance are found unassociated with uneasiness. That heterophoria may be mechanically developed, or increased, by the usual tests, I think the experience of all observers will prove. The explanation of the inconsistencies named is to be found in the innervational peculiarities of the individuals (the patients). With heterophoria, anomally of refraction nearly always exists (I have never seen an exception), and with full correction of static refraction and the patience to secure its legitimate effect, *physiological* muscular balance may nearly always be secured, which is preferable to a mechanical balance, as the eye is an organ and not a machine. In perfect cycloplegia, arising from the use of inefficient agents, no matter what mechanical device is substituted, defeats the *perfect* correction of static refraction, and may explain the apparent necessity for tenotomy in many cases. A proper correction, especially when combined with the "prism-gymnastics" of Gould, will in most cases obviate tenotomy.

Fewer surgeons do this operation now than three years ago, and another three years will probably limit the number doing it as a routine practice to those whose youth is seeking experience.

As an instance that the operation has been unnecessarily done, a United States Senator, 57 years of age, consulted me in 1887 for failing vision, for which he had visited two prominent exponents of graduated tenotomy. He was alarmed by the increasing visual defect, but was without pain. They cut his muscle tendons three times and prescribed prisms, dismissing him with the information that he "had active trouble within the eye," for which they recommended nothing. Finding a choroiditis disseminata of both eyes with a history of syphilis in early life, followed by a double iritis, and a meningitis, a prescription for syphilis seemed more essential than a tenotomy. Was this case tabulated as a success to tenotomy? He said: "I am no better and no worse for the operation, so far as I can see;" yet, was the operation harmless?

In 1887 a young woman, who had been for two months under the care of an eminent colleague in a neighboring city, who has great faith in the efficiency of cylindrical glasses of low power, came to me because she had constant pain when her eyes were open. The weak cylindrical glasses (+.25 Dcy.) which she

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had been wearing had added nausea to her pain. A correction of static refraction: R. E., + 1 Ds. ⊂ + .5 Dcy. *a* 90°; L. E., + 1.5 Ds. ⊂ — .5 Dcy. *a* 180°, relieved nausea at once, and in ten days greatly reduced pain. She became impatient because of difficulty in *reading* all she desired, consulted another, and then placed herself under the care of a specialist in New York. He had done *ten* tenotomies when I last heard of her, a year ago, and was intending to return to him for another. It is almost incredible. She was a teacher and has changed her occupation. Patience with the correcting glasses would have relieved her esophoria of 2°. I have given only two of a number of cases which have come under my observation, showing the value of a routine practice of graduated tenotomy.

No more fitting conclusion to this paper occurs to me than the title of one a short time ago, by Dr. A. Jacobi—*Non Nocere.*

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THE RELATIONSHIP BETWEEN EYE-STRAIN AND EPILEPSY.

By Ambrose L. Ranney, A. M., M. D.,
of New York.

THE case which I shall report here, in connection with a few remarks of my own, has been selected from my records of a large number of somewhat similar cases because it illustrates one point to the oculist more forcibly than any other case which I have yet encountered, viz., *that the most competent and intelligent observer never knows how near he may be to a happy conclusion of his work upon "heterophoria," so long as any remaining trace of abnormal muscular conditions exists in the orbits.*

In this particular case, I had to deal with (1) a most intractable case of epilepsy; (2) one that had been drugged for years; (3) one that had been subjected to the treatment of injection of animal extracts (*a la* Pasteur); (4) one that had no apparent source of reflex irritation outside of her visual apparatus; and (5) one that for a long time failed to improve under my treatment, in spite of very careful refraction work and apparently satisfactory results from several graduated tenotomies.

If there exists to-day any further necessity of arguing with a few members of our profession who deny that epilepsy is ever produced by eye-strain, this case ought to modify their views.

Miss D., 30 years of age, single. Family history: The father is in good health; mother is very neurasthenic; has severe

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headaches; weak lungs; astigmatism and hypermetropia. One brother has astigmatism. No hereditary nervous disease as far as known.

This patient, when first seen by me, was a remarkably developed woman. As a child she had always been well and strong. She had perfected herself at an early age in swimming and various other forms of athletic exercises. In any feat of strength or agility, she always excelled. Later, she became quite a remarkable musician. Her menstrual function appeared at the normal age. It has always been unaccompanied by any pain or physical disturbance.

Some years prior to my seeing this patient, she developed epilepsy. The seizures, which were of a severe type, (*grand mal*), have persisted at various intervals in spite of all the recognized treatment by drugs. She had been placed under the care of the most eminent specialists here and abroad prior to my seeing her, and later, when drugs had failed to accomplish anything, she had been treated for months by hypodermics of animal extracts (*a la* Pasteur), by Dr. Gibier of New York, in addition to the internal administration of various combinations of bromides. During this period of anxiety on the part of her parents and the patient herself, she had, from time to time, sought for some possible reflex cause for her epileptic seizures. Her teeth had been found perfect and were remarkably beautiful. No rectal conditions existed that could cause irritation. Her pelvic organs were normal, with the exception of a curvature of the coccyx. A suggestion had been made to her to have the coccyx removed; but its relationship to the epilepsy seemed too doubtful to justify the operation in the minds of others, who were consulted respecting it. She had no kidney disease. She was in no way hysterical, but rather unusually placid and free from nervous excitability.

In the early part of 1894, this patient was referred to me by Prof. A. A. Smith of New York. As she had never had any symptoms referable to the eyes, in her life, both the patient and her parents were naturally skeptical as to the existence of any "eye-strain." They consulted me, however, in utter despair—rather with the hope of finding something wrong in the eyes or eye muscles, than the expectation of doing so. The remaining portion of the history will show what steps were taken toward the happy solution of this complex eye problem.

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At the first examination, March 15, 1894, the patient had $^{20}/_{20}$ vision in each eye. She tolerated + 1.50 S. She also disclosed esophoria 3°; R. hyperphoria $^1/_4$°; adduction 28°; abduction 6°; right sursumduction 2°; left sursumduction 2°.

The day following, homatropin was used. The vision in each eye was then brought up to $^{20}/_{20}$ with + 1.50 S.

Prisms of 1° in each eye were given for esophoria. The strength of the prisms was gradually increased (as fast as a surplus was shown) until March 19, when she showed (while wearing 3° prisms, base out), esophoria 8°; no hyperphoria; adduction 40°; abduction 1°. *The right internal rectus was then "button-holed,"* with an immediate result of esophoria 1°, abduction 8°.

During the next week the patient showed more esophoria and prisms were again put on. They were gradually increased as before, until on March 26 her eye-tests were (while wearing 3° prisms, base out, over each eye), esophoria $10^1/_2$°; adduction 42°; abduction 0°. During this week she had two attacks of *grand mal. All bromides and cerebrine injections were stopped at my orders.*

The left internus was freely button-holed. Immediate result, esophoria $^1/_2$°; abduction 13°.

March 26 to April 2. During this week the muscles were exercised with prisms daily; the patient had one *grand mal* attack.

April 2. The eye tests showed esophoria 1°; no hyperphoria; adduction 40°; abduction 9°; sursumduction, right 2°; left 2°.

April 2 to 17. During this interval esophoric prisms were again given and slowly increased as before. There were no epileptic seizures.

April 17. Eye tests, (wearing 3° prisms, base out, over each eye), esophoria 9°; no hyperphoria; adduction 46°; abduction 4° +.

Right internal rectus again button-holed. Immediate result esophoria $^1/_2$°; abduction 10°.

April 19. One grand mal attack.

April 23. Ordered + 1.00 spherical for constant use, as it was deemed wise to take into consideration the latent error of refraction.

April 24 to June 15. During this interval the patient was tested every other day. Her tests averaged: No esophoria; occasionally left hyperphoria $^1/_4$°; adduction 40°; abduction 10°.

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She had seven seizures, but reported that they were not so severe, and not followed by as much headache and prostration as prior to the eye treatment.

June 15 to 25. During this time a $\frac{1}{2}°$ left hyperphoria prism was given and gradually increased, as patient showed a slight surplus, up to two degrees. Two seizures occurred during this time.

June 26. (Wearing a 2° left hyperphoric prism); eye tests, left hyperphoria 2°; no esophoria; adduction 40°; abduction 8°; right sursumduction 0°; left sursumduction 4°. Ordered 2° prism, base down, combined with 1.00 D. S. in left eye, as it was deemed wise for the patient to go away for the summer.

Further, as considerable operative work upon the eye muscles had been done rapidly, it was thought best for the patient to discontinue all eye treatment for about three months. During this time she could settle down to her new eye adjustments, and become accustomed to the new conditions. She left for the country with instructions to return in September following; to write, read or sew but little; and to live out of doors.

Let us see, up to this time, what has been accomplished (from the eye standpoint), during the past three months.

1. *A very large amount of "latent" esophoria has been disclosed and relieved by three graduated tenotomies.* In every instance, except in the last (prior to operation), while the patient was wearing prisms, the abduction fell enough below the normal point, (8°), to justify the amount of esophoria disclosed by the patient and to warrant an operative step for its relief. The abduction to-day stands at 8°, and the interni, (after three graduated tenotomies), are able to fuse images over 40° prisms. In other words, both the *interni and externi show normal power.*

2. Left hyperphoria, (at times suspected by me in the early tests of this patient), has now begun to disclose itself. The sursumduction tests show: Right 0°; Left 4°; the difference being *just twice the prism that she is wearing*, (2°). This warrants us in continuing it; and the patient shows a distinct surplus over the 2° prism, ($2\frac{1}{4}°$). In my experience, each degree of hyperphoria has far

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greater clinical significance than of exophoria or esophoria. Even fractions of a degree are therefore important.

3. While there has been no marked improvement in the epileptic seizures, the patient is having no more attacks than before the eye treatment, in spite of the fact that the bromides and the animal extract injections have been suddenly withdrawn. In other words, the patient is as well without drugs as she ever has been for years with them.

4. The full refraction condition, (exhibited under homatropin), has not yet been corrected. The patient will not yet tolerate more than 1.00 spherical for constant use.[1]

5. Up to this date, I had feared that *the use of animal extracts* prior to my seeing this patient, had seriously hampered me in my work. Although I had seen, up to that date, but one case of epilepsy that had been treated by them, I had been seriously alarmed by a sudden and marked diminution of sight that followed an injection of some animal extract which the patient had been taking without my knowledge. The vision returned in a few days, but the case never did well afterward under my care. So strong was my conviction, as to the effect of these animal injections upon the treatment of heterophoria, that I felt compelled, before accepting this patient, to express great doubt as to good results following my work. Apparently, in this case, however, the results of eye treatment have not been modified in any way, by the use of animal extracts.

6. The most careful questioning of the patient regarding the apparent causes of the various epileptic seizures has thus far failed to establish any relationship between the attacks, and imprudence in eating or the menstrual function. They seem to occur without any exciting cause as far as the patient can discern.

With these comments as a digression, we are now prepared to continue the study of the clinical history of this case.

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[1] Later the use of atropin showed some astigmatism in addition to the hypermetropia, that entailed a change of glasses for constant wear.

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The patient returned to the city on September 11, and reported that she had had four epileptic seizures since leaving the city on June 28.

September 11 to October 22. During this interval the patient's eyes were tested frequently, but no more hyperphoria was disclosed. She had during this time five epileptic seizures.

October 23. A graduated tenotomy was performed on the left superior rectus to-day and the prism removed from her glasses. The next day the eye tests were: Left hyperphoria $^1/_4°$; adduction 40°; abduction 8°; right sursumduction 3°; left sursumduction 3°.

October 24 to December 11. During this interval the patient had six epileptic seizures.

December 12. Some doubt arose to-day in regard to the refraction of the patient as she tolerated cylinders. To thoroughly eliminate *this* feature of the case, a 1 per cent solution of atropia was instilled into each eye. Under the atropin the vision was brought up to $^{20}/_{15}$ in each eye with the following correction: O. D. + 1.00 D. S. ⊂ 0.50 Cyl. Ax. 90° O. S. + 0.75 D. S. ⊂ + 1.00 D. Cyl. Ax. 90°. Glasses were given for constant wear to fully correct this refractive error.

December 12, 1894 to April 5, 1895. During these four months the patient was under almost daily observation and her eye tests were perfect, *i. e.* no esophoria, no hyperphoria, adduction 38°; abduction 8°; right sursumduction 2°; left sursumduction 2°.

In spite of her improved eye-conditions and general good health she continued to have about two attacks of *grand mal* each month. Determined to leave no source of possible reflex irritation uncorrected, I again sent the patient to one of the leading surgeons in New York to have her spine and pelvis examined. He strongly advised against any operation for the slight curvature of the coccyx, as he did not consider it sufficient to cause any reflex trouble.

April 5, 1895. To-day the patient showed for the first time in some months, a very slight amount of left hyperphoria, and $^1/_2°$ prism was given. This was increased, during the next few days, to a one degree prism. As no more hyperphoria appeared during the next few days, a one degree prism, base up, was combined with the sphero-cylinder in her right eye.

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Her eye tests at the present time, (February 6, 1896), are, no esophoria; left hyperphoria 1°; adduction 38°; abduction 8°; right sursumduction 1°; left sursumduction 3°.

The patient has not had a single seizure since the prism was given, over one year ago. She seems in perfect health.

April 1, 1896. The patient was seen to-day in the office, and her eye-tests were identical with those of April 5, 1895.

It may be well to draw the attention of the reader to some facts of interest to the oculist—outside of the remarkable termination of the eye treatment of this patient for epileptic seizures.

I would call particular attention to these facts in the clinical history presented:

1. Both the esophoria and hyperphoria of this patient were almost totally latent. In other words, the majority of oculists would probably have failed to discover it on a casual examination. The patient had learned (by years of practice), to unconsciously adjust for these congenital defects, and to simulate a close approach to a manifest orthophoria, (normal adjustment of the eye muscles).

2. Persistent watching of the effects of prismatic glasses judiciously given from time to time, and three graduated tenotomies (performed by me when the muscular tests warranted their employment), brought about the establishment of, apparently, perfect orthophoria for some months. The patient showed full power of abduction, adduction and sursumduction.

3. When the eye tests were persistently normal for some months and every point in refraction had been carefully determined and corrected, I was, naturally, at a loss to explain why the epileptic seizures persisted, and I was led to doubt if some other source of reflex disturbance had not escaped all the physicians who had examined and treated this girl.

4. In spite of this doubt, (and in connection with investigations of the spine and pelvis made by others at my suggestion), I still kept up an almost daily watch for some type of latent heterophoria.

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In this search I was at last happily rewarded. The one degree of latent hyperphoria, (that was at last disclosed), proved to be the remaining source of reflex irritation in this case. Since the day of its discovery, no epileptic attacks have occurred. For the first time in many years, month after month has passed without an epileptic seizure. No drugs are to be thanked for this recovery.

Some deductions may be drawn, *respecting the eye treatment of epilepsy* for the benefit of those who have had little or no experience in this line of clinical work.

Within the next twenty years we will see every neurologist of note more or less expert in testing refraction for himself, and determining without outside aid the existence of defective equilibrium of eye-muscles. He need not be an oculist, in the true acceptation of that term. Diseases of the eye properly belong to a specialty, and are best treated by those who see the most patients of that class. But the neurologist should know, and sooner or later will be forced to know, whether his patient has near-sightedness, far-sightedness or astigmatism to complicate matters, and if the eyes tend to deviate from their normal and physiological conditions. The more he studies these conditions, the more will he find to interest him, and much to relieve that is now too often unrecognized in the sufferers who apply to him for aid. He will cease to give pills to patients with from three to twenty poisonous alkaloids combined, on the principle that the sportsman adopts when he uses a handful of shot, hoping that one may perchance kill his bird. He will study his cases more intelligently, and delve less into works of therapeutical speculation. This view is neither Utopian or visionary. Neither is it the result of rash enthusiasm, but an earnest conviction that has come after years of patient inquiry and careful observation in a large number of patients suffering from nervous derangements.

A famous French philosopher seems to have fully realized the absurdities of purely therapeutical medicine when he said:

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"Nature fights with disease a battle to the death. A blind man armed with a club—that is, a physician—comes in to make peace between them. Failing in that, he lays about him with his club. If he happens to hit disease, he kills disease. If he hits nature, he kills nature."

It may be well for me to mention in this connection a few of the reasons why, in my judgment, the treatment of the eyes has totally failed, in the hands of some observers, to relieve or modify some nervous conditions that had withstood judicious medication for years; and why it is that subsequently, in more experienced hands, treatment of the same patients directed to their eye-muscles has led not infrequently to the happiest results.

1. I would call attention to the fact that *preconceived notions about old methods must be abandoned without prejudice* when a new method is to be tried.

2. Each observer must, of necessity, make himself *thoroughly familiar with all the details of the method* which he proposes to employ before he is competent to decide *pro* or *con* respecting its merits. This cannot be done exclusively by reading. No one can describe with a pen the many intricacies that are apt to arise in solving complex optical problems. It is certainly not beneath the dignity of even an eminent man to learn (by personal observation of the work of another whom he perhaps thinks is misled and by timely suggestions thus obtained) how facts that bear upon successful treatment may be determined that were, perhaps, at first obscure and difficult to ascertain.

3. With a full knowledge of the method, its intricacies, and its difficulties, *conclusions should never be too hastily arrived at* in any given case. It is always "better to be sure than sorry." Those who have had the largest experience may occasionally make mistakes in judgment, when a peculiarly complex problem is presented for solution. How much easier it is, therefore, for one with a limited experience to fall into error. The story is told that a selection of a pilot for a vessel laden with precious merchandise which was to enter a harbor full of sunken ledges and sand-

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bars, was once being made. One by one, the applicants told a tale of uninterrupted successes. Finally, one pilot was accepted simply because he said "I ought to know the channel, as I've wrecked a ship on every rock in this harbor."

So it is with many cases of epilepsy, chorea, insanity, and kindred nervous affections. These patients have, as a rule, acquired and constantly practiced from birth *certain faulty combinations of the various eye-muscles* in order to enable them to use the eyes together.

They are often able by the aid of such unnatural combinations to *simulate* a condition of apparent equilibrium of adjustment of the eyes; although a very serious expenditure of nerve-force may be demanded of them in order to do so. They are naturally unconscious of the eye-strain; because they think everybody does as they do, in order to see. They often have no eye-symptoms. They practice these "tricks of adjustment" instinctively, not as an act of volition; and they have generally to be taught, by the aid of prismatic glasses and other recognized steps, to abandon them and thus to disclose the actual mal-adjustment of their eye-muscles which has entailed upon them this long continued leak of nerve-force and later on, an abnormal reflex excitability of the nerve-centers.

They are not unlike a tortuous and difficult channel in which the hidden difficulties to surmount do not always disclose themselves upon the surface. They demand and generally repay a careful and scientific scrutiny into the adjustment of the ocular muscles and latent errors in refraction. They require time and great patience on the part of the observer, as well as skill.

4. The old methods of testing the eye-muscles will have to be abandoned at no distant date. A phorometer is now essential to all accurate work. Moreover, the separate muscles should be individually tested and their power accurately measured.

In concluding this article, I would quote, as a summary of my work upon the eyes of epileptics, some conclusions

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that I published in the *New York Medical Journal* during the early part of 1894, in connection with the detailed report of twenty-five cases of chronic epilepsy that were subjected to the eye-treatment for a period of sufficient duration to warrant a belief that the latent heterophoria had been developed and corrected.

1. In epilepsy I regard an examination of the eyes (for errors of refraction) and of the eye muscles (for heterophoria) as the first and perhaps the most important step toward a search for sources of reflex nervous disturbance.

2. No final conclusion should be reached regarding the presence or absence of heterophoria until sufficient time, patience, and skill has been bestowed upon the investigation by one who is thoroughly familiar with and practices the *later methods* for the *determination of "latent" heterophoria*.

3. All preparations of bromides and other drugs that tend to control the seizures should be withheld, as a rule, from an epileptic patient until all possible sources of reflex irritation have been scientifically sought for and, as far as possible, relieved.

There may be justifiable reasons, to my mind, for *exceptional departures* from this rule; but I wish to emphatically raise my voice here in protest against the prevalent system of drugging epileptic patients from the date of the appearance of the first fit without any attempts being made to ascertain what the causes of the epilepsy may be.

4. I strongly advocate the *employment of atropin in every case* before a final decision is reached regarding the refraction of an eye.

I also believe that in epileptic cases it is wise to insure a full correction of any existing astigmatism (by glasses to be worn constantly in well-fitted spectacle frames), and as near a full correction by spherical glasses of any latent hypermetropia that is detected as the patient can be made to tolerate, even if atropin has to be instilled at intervals into the eyes of the patient for several weeks to prevent a return of ciliary spasm.

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I have observed many cases of chronic epilepsy that have been relieved of all convulsive seizures so long as the full effect of atropin upon the ciliary muscle was maintained.

5. *No promises that absolute cure can be effected by eye treatment should ever be made to an epileptic;* but it is usually safe for the physician and patient to hope that a radical correction of marked heterophoria and abnormal refraction will eventually be followed by decided and permanent benefits.

6. The results in all cases thus far treated by me seem to warrant the conclusion that at least *ninety per cent of chronic epileptics have been better without bromides*, after a satisfactory correction of their eye defects, than they ever were when subjected to the influence of drugs. *Some have apparently been cured.* By eye treatment, up to this date (February 1896), about 20 per cent of my cases have apparently been cured of epileptic seizures; but I doubt if so large a percentage of recoveries can be safely predicted without medication.

It should be remembered that a victim to chronic epilepsy who is rendered by any treatment as free from attacks without the bromides as when under their deleterious influence has been *very markedly benefited;* again, that if a marked diminution of the attacks has been effected, the patient has double cause for gratitude; finally, that if the attacks are arrested *in toto* without drugs, it is to-day one of the most remarkable facts recorded in medical literature.

7. In cases where negative results have been observed in spite of a satisfactory investigation and correction of marked heterophoria and abnormities of refraction, I would deem it wise (before resorting to drugs for epileptic seizures) to search for other sources of reflex peripheral irritation (such, for example, as bad teeth, phimosis, rectal or uterine disease, scars, etc.)

Furthermore, the detection of chronic kidney disease, syphilis, organic brain lesions, and depression of the skull, is most important prior to the beginning of eye treatment

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or a search for other forms of peripheral reflex disturbances.

8. The treatment of heterophoria by *prismatic glasses alone is not curative;* nor, in my opinion, are very marked beneficial results to be expected from them. Prismatic glasses are valuable aids, however, in determing the existence and amount of "latent" heterophoria prior to the radical correction of such defects by graduated tenotomies.

9. *The duration of the eye treatment of epilepsy varies with the eye problems encountered.*

The establishment of orthophoria is not commonly effected in epileptics inside of one year; and long intervals of rest between the surgical steps may be demanded and thus extend this limit of time to two or even three years.

For the past five years I have refused to begin work upon the eyes of any epileptic unless I was assured that I could control the patient for a period of at least twelve months, and see the patient at such intervals as I deemed necessary during that period. Experience has taught me in this work that it is much safer to do it slowly than rapidly.

10. Too much stress can not be laid upon the importance of accurately centering all spherical and cylindrical glasses to the pupils when prescribed.

An imperfectly fitted frame may prove a source of great injury to a patient.

Moreover, a decentered glass may often lead a careful observer into serious error respecting heterophoria.

11. The objections that are raised before patients by many physicians and some oculists to the performance of a graduated tenotomy upon an eye muscle "because of its risk, danger of overcorrection, etc.," too frequently cause unnecessary alarm and often prevent patients from obtaining the relief that is within their grasp, and which prismatic glasses have not and will not afford.

The operation, as now performed, does not necessitate any confinement to the house, and all surgical dressings to the eye are avoided.

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That the successful operator must possess skill and a high grade of technique (acquired by constant practice in that special line of surgery) is apparent; but I believe that the danger of overcorrection is very small in operating properly for heterophoria, and, in the hands of an expert, an overcorrection is very readily controlled and rectified. I do not recall a case within the past ten years where I have had a moment's anxiety resulting from an overcorrection, although I have in that time performed at least one thousand graduated tenotomies upon the muscles of the orbit.

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ABSTACTS FROM CURRENT NEUROLGIC LITERATURE.

By Wendell Reber, M. D.,
of Pottsville, Pa.

Mental Changes Associated With Exophthalmic Goitre.

Maude, (*American Journal of Insanity*, October, 1895) in the *Medical Press and Circular*, 1895, LX, states: For the purposes of this paper I have taken twenty cases, with whom I am well acquainted, and with whose family histories and mental peculiarities I have been familiar for some years. The questions I wish specially to consider are the occurrence and frequency of definite insanity, and whether, short of insanity, there is not a typical psychical change. My twenty cases are all women, about equally divided in age between early womanhood and the sexual decline, all private patients and a large proportion in a higher rank of society than the ordinary hospital patient. None could be claimed as insane, but only two present at all normal states of mind.

The mental condition of all these people is difficult to describe, but is, in its particularities, very highly defined.

1. They present an extreme motor restlessness, resembling that which sometimes accompanies subacute mania and neurasthenia; many of these patients are continually moving their hands and faces, acquire tricks of movement, habit spasms of ordinary type, such as pulling the corners of their mouths, the buttons of their dress, and so on. True chorea is frequently associated with exophthalmic goitre, but has never been present in any of my patients, and has no connection with the sort of movement habit I describe; neither is this restlessness connected with the habitual tremor of the disease.

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2. Another point is the ease with which these patients are startled. A very slight interruption or noise will disturb them for hours; this is generally due to the instability of their cardiac action.

3. These people become irritable, short-tempered, discontented, prone to take offense at, and quarrel with anything and everybody. In this they merely present the usual attributes of neaurasthenics. In addition the patients become untruthful, suspicious and intolerant of contradiction or advice. The memory becomes much impaired, especially memory of current details.

But the most distinctive mental change, to my mind, is that first described by Sir James Russell Reynolds, who gave it the apt name of chorea of ideas. The patient finds it impossible to think of anything consecutively; if she makes an effort to write or talk about anything, other ideas crowd into her mind and displace the original one; names and notions, often in no way connected with the thought, crop up in the stead of the one she wants.

I am quite aware, however, that any or even all of the conditions I have described may occur in ordinary neurasthenics or hysterics, but on viewing these central nervous changes as a whole, and in fairly large numbers, I have been struck by the dissimilarity of the assembled psychic changes as compared with those of neurasthenia or hysteria. In fact, some of my patients who have presented in its most typical form the cerebral action of Graves' disease have been farthest removed from neurasthenia and showed none of the physical or mental attributes of hysteria.

Researches on the Connections Existing Between the Nuclei of the Motor Nerves of the Eye on One Side and the Posterior Longitudinal Fascicle and Reticular Formation on the Other Side.

MAHAIM, (*Journal of Nervous and Mental Diseases*, December, 1895) working with Gudden's method, experimented upon two rabbits 1 day old. In the first experiment the author extirpated the right third and fourth nerves. In the second animal he extirpated the same nerves and the sixth nerve besides. The animals were allowed to live four months. Microscopical examination of numerous transverse sections showed a rapid increase in

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volume, from before backward, of the posterior longitudinal fascicle of the normal side, while that of the operated side received hardly any new fibers. The author believes that these researches again prove the mixed character of the posterior longitudinal fascicle. At the levels between the nuclei of the third and those of the fifth nerves, the lateral part of this fascicle is composed of fibers which apparently serve to establish a connection between the nuclei of the motor nerves of the eye on one side and the reticular formation and substantia gelatinosa of the fifth nerve on the other.

Injury to the Skull in the Occipital Regions With Left Lateral Hemianopsia and Marked Contraction of Both Visual Fields.

At the meeting of the Philadelphia Neurologic Society, October 28, 1895, Drs. Mills and Myers reported an injury to the calvarium that on examination proved to be a fracture above the external occipital protuberance, extending over the mastoid process, and separating for the last two inches the lambdoid suture of the right side and two inches of the left lambdoid suture. Brain substance escaped through a rupture of the dura. A cavity in the brain about the size of a walnut was shown. Healing was uneventful, but about two weeks after the operation it was discovered that the patient's vision was much impaired. Dr. Randall made the following report on the examination of his eyes:

Vision—O. D. $\frac{6}{15}$, O. S. $\frac{6}{15}$, eyes wander out under cover. Fixes with right eye, left usually diverging. Field for form and color limited to a small area about the fixation point. Neither eye-ground shows a trace of present or past neuritis, and the intra and extra-ocular musculature is normal. Pupils fairly prompt.

Cerebral Tumor Diagnosed by an Opportune Ophthalmoscopic Examination.

(*Journal of Nervous and Mental Diseases*, January, 1896.) At the October meeting of the Philadelphia Neurologic Society Drs. Zentmayer and Burr exhibited a brain with tumor in the extreme anterior part of the right temporal lobe. The patient, a female, 32 years of age, unmarried, had been having attacks of sudden unconsciousness, vertigo, nausea, vio-

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lent throbbing in the head, and more or less continuous headache, sometimes dull, sometimes excruciating. At the time she came to consult Dr. Zentmayer she exhibited neuro-retinitis in both eyes, with marked choking of the discs, slight contraction of the form fields, normal color fields and color perception. There were no scotomata. Vision was $\frac{15}{20}$. Reaction of the irides normal; Werneck's sign absent. No local palsies. Diagnosis, tumor of the brain. When the patient was seen a few days later, in consultation with Dr. Burr, she presented the following condition: General appearance good; highly emotional, but perfectly clear minded; gait and station good; knee jerks normal; no palsies of arms, legs or face; no trouble in speech or difficulty in swallowing; hearing good; heart and lungs normal; urine, no albumin, no sugar.

The autopsy confirmed the diagnosis made during life, revealing a non-encapsulated growth situated in the anterior portion of the right temporal lobe, beneath the cortex but of such size as to distinctly enlarge the lobe.

The case is interesting as an example of disease in one of the so-called silent regions of the brain, and as showing the necessity of ophthalmoscopic examination in cases of suspected intracranial new growth.

A Case of Sudden Blindness With Equally Sudden Restoration of Sight, and Subsequent Blindness of One Eye.

Dr. John W. Waughop, (*Journal of Nervous and Mental Diseases*, January, 1896) of the Western Washington Hospital for the Insane, reports, under the above title, an interesting case with the following history:

O. J., widower, 44 years of age, native of Norway, occupation, cook. Suffered an attack of cholera in Russia in 1866. Brain fever in 1868. Sunstroke in California in 1877; was unconscious sixty days and was fed with a tube. In November, 1877, was committed to Napa Asylum where he remained nine months and then escaped and went to sea for two years. In 1888, while on a steamer bound for the old country, he dropped into a profound stupor for several hours, from which the ship's surgeon could not arouse him. After consciousness returned, he felt as if he had awakened from a natural sleep.

On November 11, 1894, he laid down for a nap. When he awoke an hour later he was totally blind. Was still blind

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when admitted into the hospital seven weeks later. Pupils responded to light; no irritation, pain, dizziness, or paralysis. During the first three months he had several spells of unconsciousness lasting about twelve hours. If not disturbed he slept them off and awoke from a natural sleep, but if disturbed he would jump to his feet and strike out violently with his fist. On March 25, 1895, while saying his prayers before going to bed, he noticed his sight had suddenly returned, the pain had all gone and he was so happy that he called his attendant and had a season of rejoicing with him and his fellow patients. The blindness had lasted four months and a half. With the return of his sight his health began to fail. Some organic trouble with the stomach began to be apparent. A marked feature was the intense rigidity of the abdominal walls independent of the presence of gas in the abdomen. Loss of vision recurred in the right eye. The other remained normal, there was no further recurrence of the spells of unconsciousness. Death, November 12, 1895. The autopsy revealed a circumscribed abscess at the base of the brain, occupying the space from the pons varolji to the optic chiasm, and involving the optic tract, the crura cerebri and the corpora quadrigemina. A carcinoma was found at the pylorus.

The Formation of New Nerve Cells in the Occipital Cortex of a Monkey Whose Occipital Lobes Had Been Completely Removed.

Up to the present time, it has been held by all investigators that the removal of the occipital lobes of monkeys and dogs causes complete blindness. Vitzou, of Bucharest, repeating this experiment on a monkey, observed that the animal began to notice objects and people again (with much difficulty) about four months after the operation. Fourteen months later the perception of objects much improved, the monkey being able to avoid obstacles, which was by no means the case during the first months following the operation.

The brain was now opened again, the trephine openings having been closed by a layer of strong connective tissue, and the space occupied previously by the occipital lobes was found completely filled out with a newly formed substance, which on microscopical examination was found to contain nerve fibres and

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pyramidal (nerve) cells. There was more neuroglia and fewer nerve cells than in the occipital lobes of an adult, but nevertheless there had been a new formation of nerve tissue. This case, the author claims, proves the possibility of regeneration of nerve tissue in the brain if the nutrition of the other parts of this organ is maintained. The explanation is offered that the sense of vision improved by the presence of the newly formed nervous elements. Macalester, in reviewing this article in the *Journal of Nervous and Mental Diseases* for February, 1896, voices the present scientific sentiment when he says that "this observation is in opposition to the theory generally accepted, of the non-regeneration of nerve elements in the central nervous system."

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PROGRAM FOR THE ATLANTA MEETING OF THE OPHTHALMOLOGICAL SECTION OF THE AMERICAN MEDICAL ASSOCIATION.

MAY 5 TO 8, 1896.

LUCIEN HOWE, Chairman. | FRANK ALLPORT, Secretary.

Address of Chairman, Lucien Howe.

Report of special committee on "Detachment of the Retina, Its Etiology and Treatment."

Report of Chairman, R. E. Randolph. "Histological Changes in Retinal Detachment."

Subjects unannounced, F. C. Hotz, E. E. Helt, F. R. Weeks and T. E. Murrell.

"Operative Treatment of Detached Retina." John F. Fulton.

"Report of a Case of Detached Retina Occurring in Chronic Bright's Disease." L. F. Love.

"Electrolysis in the Treatment of Detached Retina." W. T. Montgomery.

"Consanguineous Marriages as a Cause of Retinitis Pigmentosa." E. Oliver Belt.

"The Nomenclature of Conjunctivitis." Dudley S. Reynolds.

"The Use of Caustics in Epithelioma of the Lids." F. T. Smith.

"The Treatment of Ectropion of the Lower Lid." A. E. Prince.

"Sub-Conjunctival Injections." E. J. Bernstein.

"A Case of Ectropion of the Upper and Lower Eyelids." F. C. Hotz.

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"Gonnorrheal Conjunctivitis, Its Treatment." Louis J. Lautenbach.

"Grafting in Blepharoplastics." P. D. Kayser.

Report of special committee on "Optic Nerve Atrophy of Obscure Origin."

Report of Chairman, H. V. Würdemann. "Cases of Optic Nerve Atrophy of Obscure Origin Occurring in General Diseases."

"Obscure Cases of Optic Nerve Atrophy of Toxemic Origin." George E. de Schweinitz.

"Obscure Cases of Optic Nerve Atrophy of Peripheral Origin." Harry Friedenwald.

"Obscure Cases of Optic Nerve Atrophy Occurring in Cerebral Diseases." C. W. Kollock.

"Obscure Cases of Optic Nerve Atrophy Occurring in Spinal Diseases." G. Dunbar Roy.

"Atrophy of Optic Nerve Probably Due to Quinin." H. Burt Ellis.

"The Differential Diagnosis Between Simple Glaucoma and Optic Nerve Atrophy." B. Alexander Randall.

"Secondary Glaucoma." S. D. Risley.

"Causation and Management of Glaucoma." Leartus Connor.

"Concerning Central Scotoma, with Particular Relation to the Papillo-Macular Bundle and the Cortical Visual Centers." George de Schweinitz.

"The Relationship Between Diseases of the Eye and Brain." R. F. Le Mond.

"Treatment of Optic Nerve Atrophy by Mercurial Inunctions in Conjunction with the Hot Baths of Hot Springs of Arkansas." O. J. Short.

"The Value of Homatropin in the Diagnosis of Ametropia." Edward Jackson.

"Some Interesting Points Pertaining to Refraction." G. C. Savage.

"The Field of Fixation in Its Relation to Heterophoria." Casey A. Wood.

"Three Cases of Monocular Vertical Nystagmus." Henry Wilson Ring.

"A contribution to the Question of the Removal of the Lens in High Myopia." Herbert Harlan.

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"Results of an Examination of the Vision of the Children of the Public Schools of Baltimore." Herbert Harlan and Hiram Woods.

"Slight Chorio-Retinal Lesions as a Cause of Asthenopia and Reduced Sight." H. Gradle.

"The Co-ordination and Inco-ordination of the Eye Muscles." C. M. Hobby.

"An Ophthalmometric Puzzle." C. P. Pinckard.

"A Case of Intra-Sclerotic Cyst and a Case of Cystic Tumor of the Orbit." J. Elliott Colburn.

"Report of Intra-Ocular Malignant Tumors." George F. Fiske.

"A Case of Chloroma." S. C. Ayres.

"Dermoid Tumors of the Cornea." A. R. Baker.

"The Application of the Galvano-Cautery in Pterygium Operations." Arthur G. Hobbs.

"Keloid of the Cornea." C. D. Westcott.

"Report of 100 Cataract Cases with a Special Device for Secondary Cataract." Lyman Ware.

"A New Needle for Secondary Cataract." A. J. Erwin.

"Idiopathic Choroiditis." Adelins E. Portman.

"Report of Some Cases of Choroiditis in Young Adults." Hiram Woods.

"Keratitis Interstitialis Annularis." H. Moulton.

"Bilateral Exopthalmus." H. Burt Ellis.

"Experiments Upon Rabbits, Made with a View to Establishing a Stump for the Better Fitting of Artificial Eyes." J. Herbert Claiborne.

"A Further Clinical Note on the Use of Pycktanin." H. B. Young.

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PROGRAM FOR THE SECTION ON LARYNGOLOGY AND OTOLOGY OF THE AMERICAN MEDICAL ASSOCIATION,

— AT —

ATLANTA, GA., MAY 5-8, 1896.

TUESDAY, MAY 5TH—AFTERNOON SESSION.

Chairman's Address, G. V. Woolen, Indianapolis, Ind.

"Adenoids." Price Brown, Toronto, Canada.

Some Remarks on Adenoid Vegetations in the Vault of the Pharynx, based upon 100 Operations. G. Hudson MacKuen, Philadelphia, Pa. Discussion to be opened by Alexander MacCoy, Philadelphia, Pa.

WEDNESDAY, MAY 6TH—MORNING SESSION.

"Extra-Dural Abscess from Mastoid Empyema," illustrated-steriopticon. B. Alexander Randall, Philadelphia, Pa.

"Primary Inflammation and Abscess of the Mastoid," report of case. Dunbar Roy, Atlanta, Ga.

"Contribution to Cerebral Disease Following Middle Ear Suppuration." M. S. Loderman, New York, N. Y.

"The Operation of Mastoid Antrotomy for the Cure of Obstinate O. M. P. C.," with description and presentation of the author's antrotome. H. A. Alderton, Brooklyn, N. Y. Discussion to be opened by Arthur G. Hobbs, Atlanta, Ga.

WEDNESDAY, MAY 6TH—AFTERNOON SESSION.

"Extirpation of the Larynx." Norval J. Pierce, Chicago, Illinois.

"Surgery of the Nasal Vestibule," with report of cases. Robert C. Myles, New York, N. Y.

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"Electrolysis by a Current Controller for the Reduction of Spurs of the Nasal Septum," a supplementary report. W. E. Casselberry, Chicago, Ill. Discussion to be opened by W. H. Daly, Pittsburg, Pa.

THURSDAY, MAY 7TH—MORNING SESSION.

"Treatment of Chronic Non-Suppurative Otitis Media." S. MacCuen Smith, Philadelphia, Pa.

"Some Considerations with Regard to the Value of Intra-tympanic Operations in Deafness." F. H. Shastid, Galesburg, Ill.

"Iodin Applications in Eustachian Hypertrophy and Thickened Drumhead." A. J. Irwin, Mansfield, O.

"Phono and Phono-Massage Treatment for Deafness, Resulting from Suppurative Disease of the Middle Ear." Louis J. Lautenbach, Philadelphia, Pa. Discussion to be opened by E. L. Shurly, Detroit, Mich. H. A. Alderton, Brooklyn, New York.

THURSDAY, MAY 7TH—AFTERNOON SESSION.

"Post Nasal Malignant Tumors—Necessity of Early Diagnosis and Early Treatment." Jas. H. Shorter, Macon, Ga.

"Chronic Abscess at the Base of the Tongue." C. W. Richardson, Washington, D. C.

"Stricture of the Upper Third of the Trachea, Successfully Treated by Divulsion Performed Through the Larynx." John O. Roe, Rochester, N. Y.

"Uncommon Accidents Following Operations on the Nose and Throat." Max Thorner, Cincinnati, O. Discussion to be opened by E. F. Ingals, Chicago, Ill.

FRIDAY, MAY 8TH—MORNING SESSION.

"Nasal Hydrorrhea." D. Braden Kyle, Philadelphia, Pa.

"Clinical Notes on Ortho and Para-Chloro-Phenol." Conrad Berens, Philadelphia, Pa.

"The Paquelin Cautery, Adapted for Nose and Throat Work." J. Mount Bleyer, New York, N. Y.

"Electro-Cautery Amputation of the Uvulva." Hanau W. Loeb, St. Louis, Mo. Discussion to be opened by John O. Roe, Rochester, N. Y. James H. Shorter, Macon, Ga.

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FRIDAY, MAY 8TH—AFTERNOON SESSION.

"Keloid Tumors of the External Ear." W. Sheppegrell, New Orleans, La.

"Treatment of Acute Inflammatory Process of the Labyrinth." J. F. Fulton, St. Paul, Minn.

THE WESTERN OPHTHALMOLOGICAL, LARYNGOLOGICAL AND OTOLOGICAL SOCIETY.

The first meeting of this society was held in Kansas City, on April 7. There were 51 enrolled at this organization. Among others the following papers were read:

"Two Cases of Opening of the Lateral Sinus for the Removal of Infectious Thrombus," recovery in one case." C. Barck, St. Louis, Mo.

"Diabetic Retinitis." Adolph Alt, St. Louis, Mo.

"When Should the Cautery be Used?" Wm. C. Pipino, Des Moines, Ia.

"The Use of Peroxid of Hydrogen in Diseases of the Throat, Nose and Ear." Wm. Scheppegrell, New Orleans, La.

"A Case of Asthma Due to Nasal Obstruction and Adenoids of Pharyngeal Vault." W. W. Bulette, Pueblo, Col.

"Tinnitus Aurium." J. W. May, Kansas City, Kan.

"Tubercular Laryngitis at High Altitudes." B. P. Anderson, Colorado Springs, Col.

"Purulent Brain Infection from Otitis Media." B. E. Fryer, Kansas City, Mo.

"Subjective Sensations." W. E. McVey, Topeka, Kas.

"What Operation for Senile Cataract Should the Beginner Select?" J. H. Thompson, Kansas City, Mo.

"The Clinical Examination of Deaf Mutes." S. T. Walker, Jacksonville, Ill.

"Adenoid Vegetations of the Vault of the Pharynx," report of cases. C. E. Clark, Kansas City.

"Errors in the Literature on Javal's Ophthalmometer for the Measure of Astigmatism." C. W. Grove, Kansas City, Mo.

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"The Present Status of the Physiological Anatomy of Vocalization and Phonation." Edward H. Schaefer, Kansas City, Mo.

"Eye Affections as Related to Nasal Diseases." George E. Bellows, Kansas City, Mo.

"Organization a Protecting Factor for the Up-to-date Physician." J. D. C. Hoit.

The following officers were elected: President, Adolph Alt, St. Louis, Mo. First Vice-President, B. E. Fryer, Kansas City, Mo. Second Vice-President, Wm. C. Pipino, Des Moines Ia. Third Vice-President, J. H. Martindale, Minneapolis, Minn. Secretary, Hal Foster, Kansas City, Mo. Treasurer, W. L. Dayton, Lincoln. Neb.

Committee on Admission: J. H. Thompson, Kansas City, Mo., Barton Pitts, St. Joseph, Mo., H. W. Loeb, St. Louis, Missouri.

Committee on Publication: Hal Foster, Kansas City, Mo., C. Barck, St. Louis, Mo., J. W. Gaines, Kansas City, Mo.

The next meeting will be held in St. Louis, Mo., on the second Thursday and Friday of April, 1897.

PROGRAM OF THE SECOND ANNUAL MEETING OF THE AMERICAN LARYNGOLOGICAL RHINOLOGICAL AND OTOLOGICAL SOCIETY.

NEW YORK, APRIL 17 AND 18, 1896.

President's Address,

BY EDWARD BRADFORD DENCH.

A meeting of the American Laryngological, Rhinological and Otological Society was held at New York, April 17 and 18, at which the following papers were read:

PAPERS.

"The Diagnostic Value of Ophthalmoscopic Examination in Cerebral Disease Depending Upon Affections of the Ear." Thomas R. Pooley. Discussed by D. B. St. John Roosa and J. Herbert Claiborne.

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"A Contribution to the Study of Laryngeal Vertigo." A. C. Getchell.

"Report and Exhibition of a Case of Unusual Speech Defect." G. Hudson Makuen.

"Practical Experience with Autoscopy of the Larynx and of the Trachea." M. Thorner.

"Otitis Media Suppurativa with an Unusual Perforation of the Mastoid." E. E. Holt.

"Cancer of the Tonsil and Tongue," with report of four cases. T. C. Evans.

"The Report of a Case of Hemorrhage from External Auditory Canal." C. W. Richardson.

"Chronic Suppurative Inflammation of the Tympanic Cavity." S. MacCuen Smith.

"Etiology, Symptoms and Treatment of Rhinoliths," with report of a case. W. Scheppegrell.

"A Case of Rhino-Pharyngeal Fibroma With Projections Extending to the Orifice of Both Anterior Nares." Hanau W. Loeb.

"Pharyngeal Tuberculosis." Robert Levy.

"Diphtheria of the Naso-Pharynx." Walter J. Freeman.

"Report of Cases." J. E. Schadle.

"Pharyngeal and Laryngeal Neuroses." James E. Logan.

"Surgical Anatomy of the Mastoid." G. E. Brewer.

"A Study of Three Hundred Cases of Ear Diseases." Wendell C. Phillips.

"When Adenoids and Polypi Are the Chief Causes of Bronchial Asthma and Hay Fever." Arthur G. Hobbs.

"Otitis Media Catarrhalis Chronica," with a report of a new instrument facilitating the treatment. Joseph E. Willetts.

"A Contribution to the Study of the Diseases of the Accessory Nasal Sinuses." John R. Winslow.

"Diseases and Treatment of the Nasal Accessory Sinuses," with an analytic report. Robert C. Myles.

"Case of Angio-Neurotic Edema of the Larynx," with remarks. Dunbar Roy.

"Edema of the Larynx." O. B. Douglas.

"Acute Otitis Media as a Complication of Typhoid Fever." D. A. Hengst.

"The Mastoid and Intracranial Complications of Middle Ear Suppuration." E. B. Dench.

Report of a case. Howard S. Straight.

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INTERNATIONAL CONGRESS OF OTOLOGY.

The sixth International Congress of Otology will be held in London in 1899. The following is the list of the international committee of organization:

America: Blake, Orne Green, Boston; Buck, Knapp, St. John Roosa, New York; Lawrence Turnbull, Randall, Charles H. Burnett, Philadelphia; Holmes, Chicago; Daly, Pittsburg; Berkan, San Francisco; Roaldes, New Orleans.

Austro-Hungary: Politzer, Vienna; Morpurgo, Trieste; Böke, Szenes, Budapest; Zaufal, Prague.

Belgium: Delstanche, Capart, Huguet, Goris, Brussels; Delie, Ypres; Schiffers, Liege; Eeman, Gand.

Denmark: Schmiegelow, Holger, Mygind, Copenhagen.

England: Ballance, Cumberbatch, Sir William Dalby, Dundas Grant, T. Mark Hovell, Urban Pritchard, Parnes, St. Clair Thompson, London; Creswell Baber, Brighton; Thomas Barr, Glasgow; Bronner, Bradford; Bronne, Belfast; Fitzgerald, Dublin; MacBride, Edinburgh; Pierce, Newcastle; Stone, Liverpool.

France: Gellé, Menière, Helme, Lermoyez, Lubet-Barbon, Gougenheim, Baratoux, Paris; Moure, Bordeaux; Noquet, Wagnier, Lille; Lannois, Lyons.

Germany: Lucae, Hartmann, Berlin; Bezold, Munich; Kirchner, Würtzburg; Brieger, Breslau.

Holland: Guye, Zwaardemaker, Amsterdam; Van Hoek, Nimègue; Moll, Arnhem.

Italy: Grazzi, Florence; Avoledo, Milan; Bobone, San Remo; Brunetti, Putelli, Venice, Chiucini, De Rossi, Ferreri, Rome; Corradi, Verona; Cazzolino, Naples; Gradenigo, Turin; Masini, Genoa; Secchi, Bologna.

Russia and Poland: Ruhlmann, St. Petersburg; Stepanoff, Stein, Moscow; Benni, Warsaw.

Spain: Suné Y Molist, Botey, Verdos, Barcelona; Gonzales Alvarez, Uruñuela, Madrid; Moresco, Cadiz; Casanova, Valencia.

Sweden: Swanberg, Ceterblad, Stockholm.

Switzerland: Secrétan, Lausanne; Rohrer. Zurich; Colladon, Geneva.

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IN MEMORIAM.

Dr. James Pleasant Parker, founder and editor of these Annals, died in St. Louis, February 6, 1896, after a seven weeks' illness. He was a native of Alabama, had barely reached his 42d year and was unmarried.

After several years' experience as a pharmacist he decided to study medicine and in 1882 entered Jefferson Medical College, graduating thence in 1886. During his final year and the year subsequent to graduation he studied ophthalmology and otology in Philadelphia and New York. In 1887 he settled in Kansas City and four years later began the publication of the Annals. As a result of Parker's ceaseless industry and good management this literary venture was successful from the beginning, but, unfortunately, he lost all his money by the failure of a Kansas City Bank, just at the critical moment that he moved to St. Louis, in 1892. Instead of being discouraged by this disaster he seemed to regard it merely as an incentive to greater efforts. Henceforth, although his health was never very good, he worked literally day and night to advance the interests of the journal and, as his friends afterwards discovered, denied himself, for many months, even the ordinary necessaries of life that the Annals might be regularly issued and present a creditable appearance. This necessity for the practice of a close economy forced Parker to forego the pleasure and profit of attending medical meetings and prevented him from cultivating the acquaintance of many brother ophthalmologists, although well known to these through the interchange of letters.

These deprivations and the lack of proper rest and recreation doubtless contributed to the fatal termination of an attack of pneumonia, which he acquired in December of last year. In spite of all warnings he persisted in his labors until the last; indeed, his attendants believe that the January number of the Annals was gotten out at the expense of his life.

While more notable sacrifices of all that men hold dear have ere this been made in the temple of medicine, surely few worshippers have given of their substance more freely, more fully and with less complaint than this devoted practitioner of our art!

C. A. W.

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NOTES AND ANNOUNCEMENTS.

Dr. A. B. Hale, of Chicago, will, in future, have charge of the Spanish Department of Ophthalmology.

By arrangement with the publisher the cost to authors of ANNALS reprints has been reduced one-third.

He also corrects a typographical error in his article on Ephred*ene* Hydrochlorate; it should have printed Ephred*ine*.

The eighteenth annual congress of the American Laryngological Association will be held at Pittsburg, May 14, 15 and 16.

Dr. F. B. Eaton has left Portland, Ore., and settled in San Jose, Cal. He has entered into partnership with Dr. W. A. Gordon, of the latter place.

The fifth meeting of the German Otological Society will be held this year at Nürnberg on the 22d and 23d of May. Prof. K. Burkner of Göttingen is Secretary.

We regret to hear that Dr. T. E. Murrell is compelled by ill-health to relinquish practice. We trust that the climate of New Mexico will soon restore him to his old time vigor.

Dr. H. V. Würdemann, of Milwaukee, has consented to act as German editor of the ANNALS' Department of Ophthalmology. We refer our readers to the present number for a sample of his painstaking work.

We are requested by Dr. Allport to announce that "the room for holding the meetings of the ophthalmological section at Atlanta will be at the 'Aragon' Hotel. Ophthalmologists will do well to engage rooms at this hotel."

El Siglo Medico of January 19, 1896, announces that the first Spanish Otological, Rhinological and Laryngological Congress meets for a three days' session in Madrid on October 18, 1896. The constitution and by-laws are already published.

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Dr. W. A. Shoemaker, ex-house surgeon of the New York Eye and Ear Infirmary, has returned from Europe, where he has been continuing his studies in ophthalmology and otology for the last eighteen months. He has located at 2635 Washington Avenue for the practice of his specialty.

Dr. J. Campbell Smith, for five years larynologist and rhinologist at the Clifton Springs Sanitarium, N. Y., who last year resigned his position at that institution for the purpose of pursuing the study of his specialty in Europe, has returned and located at 2635 Washington Avenue, St. Louis, Mo.

In his article on the "Aftertreatment of Normal Cataract Extraction" published in the *Therapeutic Gazette* of February, Dr. Casey Wood inadvertently credited Würdemann, of Milwaukee, with the invention of the "base-ball" cataract mask, therein pictured. Credit is really due Dr. George E. Frothingham, of Detroit.

Dr. George F. Suker, of Toledo, O., reminds us that it is not correct in speaking of the action of Roentgen's X rays as photography. They probably give a shadow picture and consequently a different nomenclature is called for. Instead of photograph we may use the term scotograph, *skatos*, darkness, shade—sciagraph from skia, a shadow and graphein to write.

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BOOK NOTICES.

NEW TRUTHS IN OPHTHALMOLOGY, as developed by G. C. Savage, M. D., Professor of Ophthalmology in the Medical Department of Vanderbilt University; President State Medical Society, etc. Forty-eight illustrations. Third edition, pp. 270. Nashville, Tenn., 1896.

The publication of the first edition of Dr. Savage's book provoked considerable discussion and much criticism. The third edition mainly consists of chapters of the earliest edition and certain additions which may be considered as replies to his critics, Hotz, Wilson and Eaton.

While it is perhaps not possible to entirely agree with the author as to the absolute verity of all the propositions laid down by him yet we are certainly indebted to him not only for his investigations, in a comparatively new field but also for the widespread discussion of the questions involved in these investigations. Why do some patients, having the same refractive errors, immediately accept and others reject the correcting lenses? Is insufficiency of the oblique muscles a factor in the production of asthenopia? Is there any calisthenic method by means of which tonicity of the superior and inferior recti and the obliques can be increased? What are the relations between the action of the intrinsic and extrinsic ocular muscles in the presence of the various forms of ametropia? Surely such queries pertain very much to the daily life and work of the ophthalmologist and his patients, and we ought to feel towards the man who partly or wholly answers them.

In Chapter IX, which is devoted to answering the question, "Can Presbyopia be Deferred by Sythmic Exercises of the Ciliary Muscles?" Savage advises regular ciliary gymnastics for the purpose of putting off the evil hour when lenses for near work are required. It may well be asked in this connection whether the time occupied in carrying out the instructions laid down by the author might not be just as well applied to putting on and taking off a pair of lenses that will bring to a sufficiently near point the ever receding p.p. Or, let us follow the example set by a certain friend of ours who, when print begins to blur and night reading becomes difficult, gives himself a week's vacation with rod or gun, and comes back to find his presby opia of small annoyance.

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The author might, perhaps, have had something more to say about the importance of estimating the amplitude of convergence and the range of accommodation in heterophoria and ametropia, and the expression of the former in meter angle terms. After all, these are of quite as much importance in clearing up "refraction" mysteries as is the determination of the amount and kind of heterophoria.

There is, also, in this book a tendency to consider but one element in cases of asthenopia from muscular anomalies and to ignore the condition of the nervous centers and the general health. For, as the author would probably be the first to admit, many of these are relieved by the removal of other peripheral and central "irritants," by securing improved digestion and proper rest and by taking exercise rational in kind and amount.

The volume is well printed on good paper and should find a place in every ophthalmologist's library. C. A. W.

THE TOXIC AMBLYOPIAS; THEIR CLASSIFICATION, HISTORY, SYMPTOMS, PATHOLOGY AND TREATMENT. The Alvarenga Prize, 1894. By Geo. E. de Schweinitz, A. M., M. D., Prof. of Ophthalmology in the Philadelphia Polyclinic, etc. Forty-six illustrations and nine plates; Lea Bros. & Co., 1896.

It is not often that one has the pleasure of reading a work that is at once a delight to the eye and a mine of information to the searcher after ophthalmological truths. However, this dainty volume, wtth its white and gold cover, its red and black title page, its heavy paper, clear type and well prepared illustrations, forms, in both these particulars, a model example of book making.

Dr. de Schweinitz's essay furnishes us with an epitome of all that is worth preserving of other men's contributions to the study of the toxic action of drugs and other agents upon the ocular strictures, and he has added to it an account of his own original investigations of the effects of alcohol, quinin, cinchonin, salicylic acid and filia mas upon the lower animals. It seems appropriate that this, the best, the most complete and the most original account of the amaurosis from quinin and other cinchona derivatives, should be given by an American ophthalmologist, if for no other reason than that by far the largest number of these cases have occurred and have been studied on this continent.

We note, especially, a contribution to the differential diagnosis between the amblyopia due to toxic agents and toxic retrobulbar axial neuritis, disseminated sclerosis, locomotor ataxia and optic atrophy, with central scotomata to be found, tabulated, on pages 85 and 86.

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The illustrations, many of them micro-photographs on elucidation of the author's own notes, include the well-known pictures and diagrams drawn by Uhthoff and used by him when his classic essay on alcoholic amblyopia was first published in Graefe's *Archiv.*

The monograph is prefaced by a table of contents and ends with a well made index. We heartily recommend this valuable work to all our readers. C. A. W.

We respectfully present the following epitome to those students of ophthalmology who concern themselves with the cultivation of myopia in our American schools. It is copied from a Notice of Vol. II, Froebel's "Republic of Childhood," translated by Kate Douglas Wiggin and Nora Archibald Smith. The first of the three volumes, "Froebel's Gifts," has been received with great favor as of special value to both kindergartners and mothers. This volume continues the admirable scheme begun in that, and its scope is well indicated by the subject chapters: "The Gifts and Occupations of the Kindergarten, Perforating, Sewing, Drawing, Linear Drawing, Objections to Linear Drawing, Circular Drawing, Free-hand and Nature Drawing, Thread Games, Paper Interlacing, Leaf Interlacing, Weaving, Paper Cutting, Paper Folding, Peas Work, Modeling in Clay, Miscellaneous Occupations, Sand Work, General Remarks on the Occupations."

What a literary pabulum for our babes and sucklings and what an incentive to the lengthening of their oculum antero-posterior axes!

DESCRIPTION OF THE OPHTHALMIC METHODS EMPLOYED FOR THE RECOGNITION OF NERVE DISEASE. By Charles A. Oliver, A. M., M. D.. Attending Surgeon to Will's Eye Hospital; Ophthalmic Surgeon to the Philadelphia Hospital; Consulting Ophthalmologist to the State Asylum for the Chronic Insane of Pennsylvania. 1895, small quarto; 50 pp. University of Pennsylvania Press.

In this monograph Mr. Oliver has systematically grouped all of the most important eye symptoms which may be considered of value, not only to the ophthalmologist and neurologist, but to the general practitioner, in the proper and careful study of the ocular manifestations of nerve disease.

The volume, which is of convenient size for ready handling, is printed in clear, bold and easily read type; the subject matter

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is arranged so that the various sensory and motor changes can be studied in natural sequence, and the whole is so indexed that ready reference to any desired symptom is obtainable.

We commend it as a useful guide and an ever ready companion that can be depended upon.

THE EXAMINATION OF THE EYE FROM THE STANDPOINT OF THE NEUROLOGIST. By Charles A. Oliver, A. M., M. D., Attending Surgeon to Wills' Eye Hospital; Ophthalmic Surgeon to the Philadelphia Hospital, etc. Reprinted from "A Text-Book on Nervous Diseases by American Authors." Edited by Francis X. Fercum, A. M., M. D., Ph. F.

This reprint, which comes to us from the pen of the same author, has been read by us most carefully. The material, which embraces an accurate and a succinct description of all of the most certain of the plans that can be offered to the practical neurologist in the study of the ocular symptomatology of nerve disease, has been exceptionally well handled and brought to a perfection that has not been equalled in any similar work.

Without prejudice and bias we can unreservedly assert that the editor of the work is to be congratulated upon having had such a careful and valuable resume of the subject thus given to him for the benefit of his readers.

THE FUNCTIONAL EXAMINATION OF THE EYE. By John Herbert Claiborne, Jr., M. D., Adjunct Professor of Ophthalmology New York Policlinic; twenty-one illustrations, ninety-six pages. The Edwards & Docker Co., Philadelphia, 1895.

This book is written in a practical manner, well adapted to the needs of the student beginning the study of refraction and making clear a number of points that are more or less puzzling at first. In the chapter on the errors of refraction no mention is made of the latent hyperopia present in young subjects, the manifest hyperopia only having been taken into consideration. The author might, with advantage, have gone a little farther and devoted a chapter to the all-important subject of skiascopy, especially as he refers to no other objective tests.

The book is printed on good paper, in clear new type and reflects credit on the publishers. T. A. WOODRUFF.

J. OELLER. (*Atlas der Ophthalmoscopie*, Heft I, verlag von J. F. Bergmann, Wiesbaden, 1896.) The first number of this most recent addition to our atlases has appeared and far surpasses anything hitherto published for accurate detail and

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artistic execution. Although expensive, (100 marks) $25.00 for the series of five parts, it amply repays the possessor not only by reason of the knowledge to be gained, but the exquisite drawing and coloring of the illustrations is a source of enjoyment to those having artistic instincts. Each number has fifteen plates, one on each page, 12x16 inches (seventy-five in the series), with descriptive text; to be obtained either in German or English; the translation by A. H. Knapp, of New York.

H. V. W.

A. Vossius, of Giessen. (Die Wichtigsten Geschwülste des Auges. Heft VII, *Augernätzliche Unterrichstafeln*, verlag von J. V. Kern, Breslau, 1895.) A series of fourteen plates, with text, showing sections of the eyeball about twice natural size: Carcinoma of conjunctiva, sarcoma of uveal tract, glioma of the retina, tumors of the nerve and tuberculosis of the uveal tract in twenty-two illustrations of but little artistic merit.

H. V. W.

A. Vossius, of Giessen. (Das Staphyloma der Cornea und Selera, Heft VIII, *Augenartzliche Unterrighstafeln*, verlag von J. V. Kern, Breslau, 1895.) A series of eight colored plates, fairly well executed, with explanatory text.

H. V. W.

Alexander, of Heidelberg. (*Neue Erfahrungen über Luetische Augenerkrankungen*, verlag von J. F. Bergmann, Wiesbaden, 1895.) This is a valuable short monograph of eighty-four pages, a continuation of his previous work, *Syphilis und Auge*, in which the literature has been carefully compiled to date. For general treatment he especially advises mercurial fumigations and the hypodermatic treatment by calomel, gray oil, salicylates, etc., together with iodid of potash. Locally, he advises subconjunctival injection of sublimat in parenchymatous keratitis, iritis and iridocyclitis, choroiditis and chorio-retinitis, retinitis and neuritis. H. V. W.

A. Vossius, of Giessen. (Die Croupöse Conjunctivitis und ihre Beziehungen zur Diphtherie, in a series of articles published by Karl Marhold in Halle. Samlung zwangloser Abhandlungen aus dem Gebiete der Augenheilkunde, 1896.) A mono-

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graph of twenty-three pages describing diphtheritic conjunctivitis and referring to the literature. Many authors had endeavored to create a distinction between croupous and diphtheritic inflammation of the conjunctiva as well as of the air passages. His clinical experience made him agree with those writers who claimed the identity of the affections; twenty-two cases appearing like the croupous conjunctivitis of text books (exclusive of others which had a diphtheritic look) came under his care. All had fever, although the disease was in some cases monocular; corneal complications and shrinking of conjunctiva followed in some. The disease begins as a red spot on conjunctiva, or with inflammation, which rapidly becomes suppurative; lids swell and false membrane appears. Keratitis and sometimes loss of sight from corneal ulceration occur. Diphtheritic membranes generally exist on the tonsils or pharynx in the same case, or in other members of the family. Some cases die. Ocular infection usually arises from inoculation by the fingers. Treatment by antitoxin generally, and locally by cold compresses of 1:5000 sublimat or 1:1000 cyanid of mercury with nitrat of silver brushing to conjunctiva of lids in blennorhoreal cases is advised. H. V. W.

A MARINA, of Trieste. (*Ueber Multiple Augenmuskel-Lähmungen, und ihre Beziehungen zu den sie bedingenden, vorzugsweise Nervosen Krankheiten.* Verlag von Franz Deuticke, Leipzig und Wien, 1896.) A monograph of 358 pages, which treats extensively of all phases of the subject with illustrative cases, going over the following ground: Congenital cases, bulbar-paralysis, ophthalmoplegia ext., polyencephalomyelitis, sclerosis dissemenata, syringomyelia, poisons and infectious diseases, polymyositis, polyneuritis, hysteria, hemorrhages and brain diseases, etc., closing with a well-written account of the relations of the pupillary movements to the brain centers and diseases thereof. Literature on the subject is extensively quoted. H. V. W.

H. KRIENES, of Breslau. (Ueber Hermeralopie. Speziell. Akute Idiopathische Hemeralopie, verlag von J. F. Bergmann, Wiesbaden, 1896.) A monograph of 185 pages, well illustrated by diagrams of the visual fields. The author bases his book upon observations of twenty-nine cases of so-called acute,

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special or idiopathic hemeralopia and five of chronic hemeralopia. He considers the etiology to be from a loss of nourishment and blinding, i. e., destruction of the relation between waste and repair of the visual substance (Sehstuffe). He thinks that in some cases he has seen a disposition to hemeralopia and hence a formation of the "*status hemeralopicus.*" He describes each case in detail, giving special attention to the color perception, showing that there is a constant diminution for colors, especially for blue, in the center and the periphery of the visual field. It is not proper to call hemeralopia a functional disease, for it always originates in some form of chorioretinitis. In most cases there is diminishment of vision in daylight, and in dim light there is disproportionate diminution of vision with contraction of the visual fields, especially for blue. Night vision is poor. Peculiar types of the visual field, such as reversal of the color fields, and fatigue symptoms are common. In some cases there was erythopsia; in many the field for blue was less than for other colors. He goes extensively into the literature on the subject. H. V. W.

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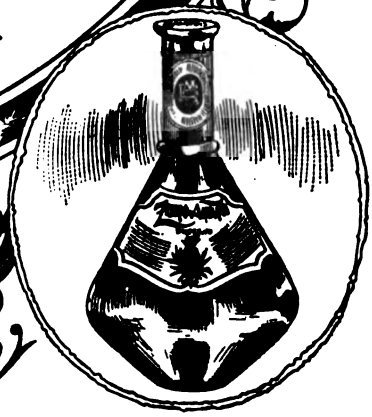
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76	Morph. Mur., 1-8 grain	90	40
77	Morph. Sulph., 1 grain	3 20	1 45
78	Chlor. Gold and Sodium, 1-100 grain	1 00	45
79	Chlor. Gold and Sodium, 1-75 grain	1 00	45
80	Chlor. Gold and Sodium, 1-50 grain	1 00	45
81	Chlor. Gold and Sodium, 1-20 grain	1 20	55
82	Chlor. Gold and Sodium, 1-10 grain	1 80	80
83	Strych. Sulph. 1-80 grain	80	35
84	Codeinæ Phosph. 1-8 gr.	1 50	70
85	Codeinæ Phosph. 1-4 gr.	2 30	1 05
86	Codeinæ Phosph. 1-2 gr.	3 00	1 35
87	Codeinæ Sulph., 1-4 gr.	2 00	90
88	Strych. Nitras, 1-40 gr.	80	35
89	Strych. Nitras, 1-60 gr.	80	35
90	Strych. Nitras. 1-80 gr.	80	35
92	Morph. Sulph., 1-4 grain / Atropine Sulph. 1-120 gr.	1 10	50

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NOTE.—It will only be necessary in ordering to specify the numbers as above. These Tablets will be sent by mail on receipt of the proper amount.

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1-128 grain Strychnine to teaspoonful.

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℞ Listerine, ... f. ℥i
Glycerini, ... f. ℥iii
Sodii bicarb., } . . . aa. ℥ss
Sodii biborat, } . . .
Aquæ q. s. ad., . . . f. ℥iv *M.*
Sig. f ℥ i in ℥ ii warm water snuffed up the nose, and as a gargle for the throat three times daily.

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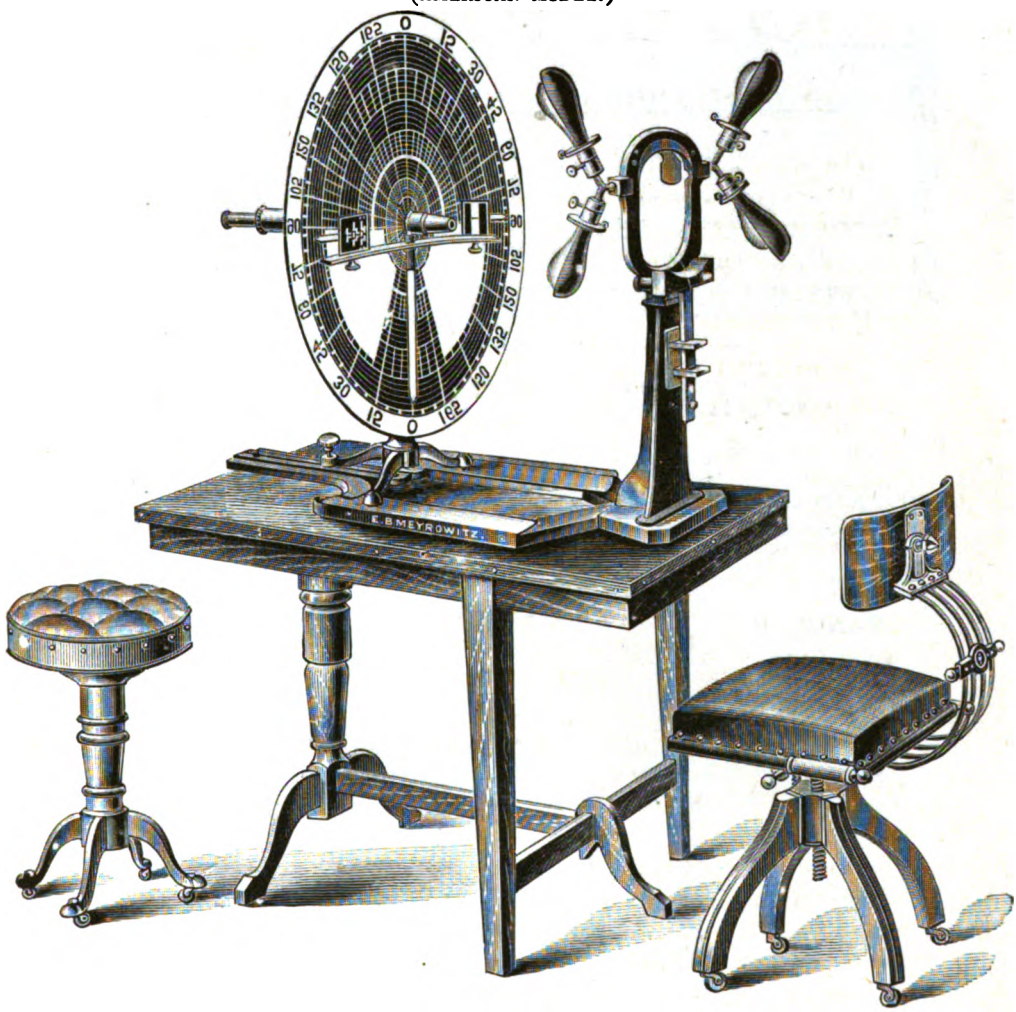
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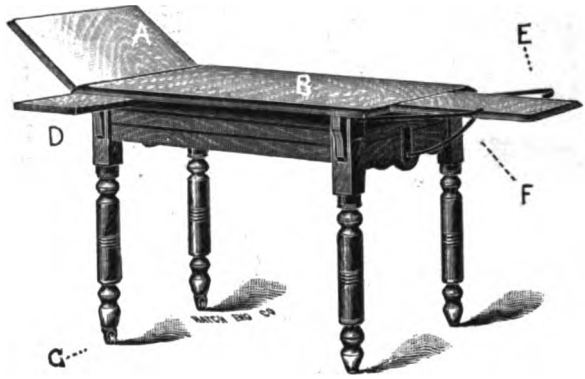
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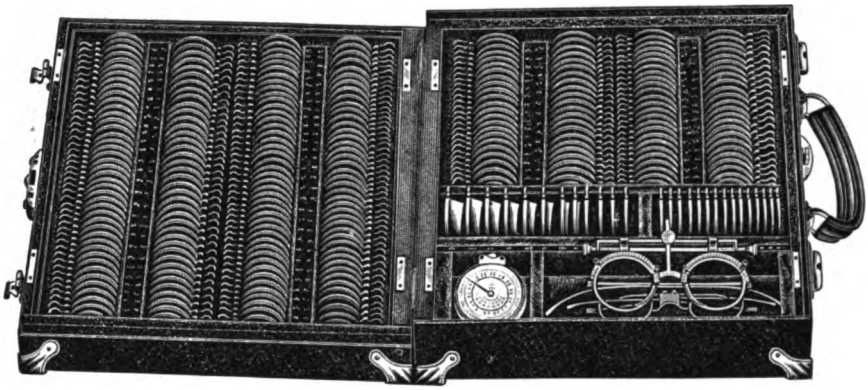
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